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DIFFERENTIAL DIAGNOSIS:

A MANUAL OF THE

COMPARATIVE SEMEIOLOGY

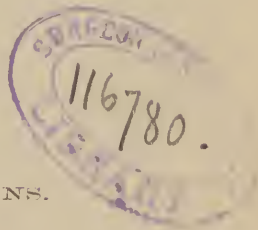
OF THE

MORE IMPORTANT DISEASES.

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AMERICAN EDITION.
WITH EXTENSIVE ADDITIONS.

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NOTE OF THE AMERICAN EDITOR.

THE present work was at first designed to be little more than a republication of Dr. F. De Havilland Hall's *Synopsis of the Diseases of the Larynx, Lungs, and Heart*; but as the advantages of the tabular method of presenting diagnostic points became more manifest to the editor, he concluded it would be a good service to many members of the profession, and many preparing to become members, to extend the plan to all the more frequent and important diseases. In carrying this out, he has held especially in view (1) the *early* and often overlooked signs of the presence of disease; (2) the collection of whatever symptoms are alleged on good authority to be *pathognomonic* of pathological conditions; (3) any peculiar features which diseases have been found to present in this country. Preference has been given to American over European authorities, as every year adds confirmation to the opinion, now widely received, that diseased conditions assume very different aspects under different climatic and sociological surroundings.

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INTRODUCTORY.

The nomenclature of diseases adopted by the best authorities divides them into two great classes—General Diseases and Local Diseases. General diseases are stated to comprehend those which pervade the whole system, and in which any local affection may be regarded as accidental; while local diseases are those which affect certain organs, and in which the involvement of any other part of the body is but a sequel of the local lesion.

This classification is also the one most practically useful to the physician. The first question he should put to himself on examining a patient is, Have we here a general or a local disease? He reaches the answer by excluding those organs whose form and functions present nothing abnormal, and by distinguishing among such as are implicated those which indicate primary and essential lesions from those which are effected accidentally or secondarily. When no such primary lesions are discoverable, he has to do with a general disease.

For the purpose of diagnosis, General Diseases are best divided into the two classes of (1) Fevers and (2) Diseases of the Blood. These, also, are each divisible into two classes marked by one or two leading and prominent symptoms, which are the guides to the diagnostician. Thus,

Fevers are either characterized by an eruption of a well-defined character (the Exanthemata); or by a recurrent marked diminution or total cessation of the symptoms (Periodic fevers); or else by a persistent course not manifesting either of these phenomena (Continued fevers).

Diseases of the Blood are either constitutional (the Dyscrasiæ); or else characterized by definite local lesions (Rheumatism, Gout); or

by a recognizable change in the blood itself (Anaemia, Leukemia, Scurvy, Purpura).

Local Diseases are more conveniently classified with reference to the physiological than the anatomical divisions of the body. The functions of life are carried on by the Nervous, Respiratory, Circulatory, Digestive and Urinary systems, and the impairments of each of these form classes of diseases broadly discriminated by signs easy of recognition. The niceties of diagnosis are needed rather to distinguish between the varied diseases peculiar to each of these systems than to locate the disturbance in one or the other of them.

PART I.

GENERAL DISEASES.

CHAPTER I.

THE FEVERS.

CONTENTS.—*The Febrile State. Inflammatory, or Symptomatic, and Essential Fever. The Exanthematous or Eruptive Fevers. Typhoid and Typhus Fevers. Typhoid and Malarial Fevers. The Typhoid State. Malarial Fevers. Cerebro-Spinal Meningitis. Acute Tubercular Meningitis. Yellow Fever. Relapsing Fever.*

THE FEBRILE STATE.

The most common of all forms of disease is that which is presented by the Febrile State. The chief objective symptoms which it offers are found in

1. The pulse.
2. The tongue and uvula.
3. The temperature.
4. The urine.

1. The *pulse* is increased in frequency, and may be either hard, full and tense, or small and contracted. The former condition is more common in active inflammations of the organs above the diaphragm; the latter, in many inflammations below the diaphragm and in idiopathic fevers. In fevers of a typhoid form, an unusually slow pulse is sometimes encountered, as also a pulse with a double beat, the "dicrotic" pulse.

2. The *tongue* in the beginning of the febrile state is usually whiter and dryer than usual, and more or less coated with a "fur" or viscid covering, from the more rapid evaporation of the watery secretions. Later on, in the progress of severe fever, the tongue becomes dry, and the exsiccated mucus forms a brownish or blackish crust, while the papillæ shrink, so that on this crust becoming detached, the surface of the organ looks glazed and smoothed. The peculiar appearance of the tongue in certain diseases will be described in connection with these diseases.

3. The *temperature* is one of the most prominent phenomena in fever; yet its correct appreciation was never understood previous to the labors of WUNDERLICH, whose decease is so recent. The clinical thermometer is now as indispensable to the practitioner as the lancet used to be.

In using the clinical thermometer, Dr. SYDNEY RINGER, of London, lays down that in order to insure correctness in the observations, the following conditions must be fulfilled:

1st. That the patient should be in bed, otherwise the temperature of the surface will be much below that of the internal organs.

2d. That the patient be in bed at least one hour before the observations are made, since that time is necessary for the surface of the body to regain the heat lost by previous exposure.

3d. The position of the person examined should be such that the anterior and posterior edges of the axilla are relaxed, for otherwise a cup-shaped cavity is formed, in which the thermometer moves freely, without being in contact with its walls. This occurs especially in emaciated persons.

4th. The temperature should be taken twice daily, say at eight in the morning and eight in the evening. If but one observation is pos-

sible, then the evening should be preferred, since the morning temperature, abnormal though it may be, rises in the evening.

5th. The thermometer should remain in the axilla at least five minutes.

According to a series of observations by Dr. H. WEGSCHEIDER* the following propositions should be received in reference to the distribution of temperature in febrile diseases :

1st. There is no constant relation between the internal temperature, as measured in the axilla, with the general temperature of the surface.

2d. Two completely symmetrical parts of the skin, as between the toes, show no proportionate course in their temperature ; not only do they differ by not rising or falling to the same level, but one may rise while the other remains stationary or falls, and *vice versâ*.

3d. There is greater variation in the temperature-curves in the same part of the skin in the same person in fever than in health ; but in fever there is a striking fall of temperature, notably lower than in the healthy state. However, in those people who suffer from cold feet, the temperature is often as low, or somewhat lower.

4th. It follows, from the last, that there is a greater difference in fever between the temperature of the axilla and that of the periphery than any changes of local temperature which may occur in health.

There is a pretty constant increase and decrease of temperature in the specific fevers, a close observation of which, in accordance with the foregoing rules, will often serve as a valuable aid both in diagnosis and in prognosis. Dr. WUNDERLICH, in his work, gives useful tables for this purpose, and we subjoin a valuable comparative table of the pulse as well as the temperature in seven of the more frequent febrile diseases, drawn from recent English observations.

* *Archiv der Pathologie*, Feb., 1877.

COMPARATIVE TABLE OF THE TEMPERATURE AND PULSE IN THE LEADING FEBRILE DISEASES.

Day.	Typhus Fever.		Typhoid Fever.		Measles.		Scarlet Fever.		Febricula.		Rheumatic Fever.		Pneumonia.	
	T.	P.	T.	P.	T.	P.	T.	P.	T.	P.	T.	P.	T.	P.
1st...													102.8	123
2d...			102.	98			104.2	144	103.	99			102.3	120
3d...	104.8	108	103.1	98			104.	148	103.7	103			103.6	122
4th...	103.6	113	103.4	110	102.3	130	103.	134	104.	105	101.8	105	104.	126
5th...	103.	114	102.7	107	103.	124	101.2	122	102.6	99	102.	114	103.	122
6th...	103.2	122	103.2	104	100.2	112	100.6	108	98.4	99	102.	116	102.8	122
7th...	104.2	124	103.7	107	98.	102	100.	106			103.	120	100.	114
8th...	103.8	122	102.5	108	98.	98	100.	110			100.	90	99.	94
9th...	103.	113	103.	108	98.	80	99.8	108			100.	96	98.	78
10th...	102.7	117	102.6	111			99.	100			99.4	86		
11th...	102.4	119	103.	111			98.6	104			101.	104		
12th...	102.2	108	102.5	112			98.	84			101.	102		
13th...	100.5	106	102.2	108							102.	100		
14th...	100.	100	102.4	109							100.9	100		
15th...	99.4	98	101.8	107							100.	88		
16th...	98.7	92	102.	100							98.	90		
17th...	98.4	90	101.4	100							99.	94		
18th...	98.2	85	98.8	98							102.	96		
19th...			101.4	105							103.	102		
20th...			102.2	100							101.6	100		
21st...			98.8	98							101.7	104		

The above table, prepared from a series of observations, by Dr. J. S. WARTER,* illustrates the normal and average contrasts of pulse and temperature in the course of the diseases specified, when their tendency is to recovery.

4. The *urine* in fever is scanty and high colored. Its alteration from the healthy average is chiefly in the much larger quantity of *urea* it contains. According to the researches of Dr. J. BURDON SANDERSON, in the early stage of fever a patients excretes about three times as much urea as he would do on the same diet if he were in health, the difference between the fevered and the healthy body consisting chiefly in this, that whereas the former discharges a quantity of nitrogen equal to that taken in, the latter wastes the store of nitrogen contained in its own juices. That this disorder of nutrition is an essential constituent of the febrile process is indicated by the fact that it not only accompanies the other phenomena of fever during their whole course, but

* St. Bartholomew's Hospital Reports, vol. ii., p. 78.

precedes the earliest symptoms and follows the latest. That it anticipates the beginning of fever was first demonstrated by Dr. SIDNEY RINGER in his investigation of the relation between temperature and the discharge of urea in ague. That the same condition continues after the crisis has passed, *i. e.*, the temperature has begun to sink, was shown by Dr. SQUAREY.

There are various methods of determining the secretion and amount of urea. Its presence may be recognized when the urine has a deep yellow color, a high specific gravity, and a strong urinous odor. If a small quantity of it is allowed to evaporate to a mucilaginous consistence, and then nitric acid be added drop by drop, crystals of nitrate of urea are found. They are of a pearly white lustre, and their number indicates the quantity of the substance present. When very abundant, the crystals will form on the addition of nitric acid to the urine without the preliminary evaporation.

INFLAMMATORY, OR SYMPTOMATIC, AND ESSENTIAL FEVER.

The group of symptoms collectively known as a *fever* often accompanies strictly local maladies and injuries. In such cases it is distinguished as Inflammatory, or Symptomatic, Fever, and it is of the first importance to distinguish it from Essential, or Idiopathic, Fever, under which general term all true fevers are included. The development of this distinction has been one of the most prominent achievements of the modern methods of diagnosis. It is astonishing, remarks a recent writer, with the progress of medicine, how many affections have been passed over from the domain of fevers to the narrower circle of inflammation of individual organs. Hence it is of prime importance to determine promptly in the beginning of a case whether the febrile symptoms are a feature of a local disease or the commencement of a general one.

Dr. WILLIAM STOKES* divides the local symptoms of essential fever into three groups: (1) Functional or nervous; (2) those dependent on special anatomical changes; (3) those arising from re-active inflammation.

**Lectures on Fever*, London, 1874.

(1) Examples of functional symptoms are delirium, cough, diarrhœa, epigastric tenderness, and the like; (2) of the second group, the alterations which occur in the brain, lungs, spleen or intestinal glands; (3) and of the third the swelling and infiltration of organs. What he calls "the grand rule of diagnosis" in fever is *not to apply to these local symptoms in essential fever the rules of diagnosis of local diseases*, as this would lead to a false appreciation of the disease, and to erroneous treatment. For example, a typhus patient may exhibit the marked symptoms of inflammation of the brain; but if he is treated with ice to the head and leeches, he forthwith sinks and dies.

Inflammatory or Symptomatic Fever.

Is usually preceded by some local lesions or symptoms.

Pulse frequent, full and generally tense.

Is accompanied by marked and definite local disturbance.

Course is indefinite, dependent upon the progress of the local lesion.

Anatomical lesions definite and invariable.

Essential or Idiopathic Fever.

Has no definite antecedent local symptoms.

Pulse frequent, full or small, but rarely tense. (DA COSTA.)

Local disturbances vary, and are not prominent, or but temporarily so.

Runs a definite course, with a strong tendency to spontaneous termination at a given time.

Generally characterized by absence of definite anatomical lesions.

Of hardly less importance is the distinction between *organic* and *functional* (or neurotic) *changes* in fevers. Delirium, pain, coma, convulsions, cough, etc., may all appear as phenomena of the evolution of the poison which produces a general fever, without signifying any definite anatomical lesion. In other words, essential fever produces local symptoms without organic change. It is, remarks the author just quoted, because this proposition has not been sufficiently accepted, sufficiently engraved upon the minds of medical men, that so much mischief has been done in the erroneous treatment of fever.

THE EXANTHEMATOUS, OR ERUPTIVE FEVERS.

This group includes small-pox, scarlet fever, and measles, and also those more indefinite forms, varioloid, varicella, and rōtheln. They have many points of similarity. "They are all characterized by a period of incubation, during which the poison lies dormant in the system; by a fever of more or less intensity preceding the eruption; by an eruption which presents a distinct aspect in each disease, and which pursues a definite, clearly defined course until it, and with it the febrile malady, disappears. Moreover, they are all very prone to occasion serious sequelæ; are all, in the main, disorders of childhood; rarely attack the same person twice; are contagious, and have not as yet been brought under specific treatment." (DA COSTA.)

It is of great credit to the practitioner, and often of the utmost utility to others, for him to make an *early* diagnosis between these diseases. This is not always possible to accomplish. But a close observer will find several indications which will guide him to a correct opinion before the appearance of the rash. One of the principal of these is

The condition of the throat. This region is affected at a very early stage in nearly all cases. In simple scarlatina the very earliest symptom is a more or less uniform redness of the middle of the soft palate, the uvula alone, or the uvula, anterior pillars of the fauces, and tonsils; never the posterior wall of the pharynx alone. On the other hand, in small-pox, the part first affected is the posterior wall of the pharynx; while in measles the posterior walls of the fauces and neighboring parts of the pharynx are always redder than the anterior pillars and soft palate (Dr. ALOIS MONTI). In rōtheln and measles the tonsils are red and swollen early in the disease; but in simple scarlet fever for the first twelve hours, there is very little swelling of the affected parts, and children seldom complain of pain in the neck or in swallowing. After twelve or twenty-four hours, the swelling commences, and the redness becomes less uniform, and more punctiform. This peculiar punctiform appearance may be noted often ten or twelve hours before the rash on the skin is visible.

In malignant scarlatinal sore throat, there is from the first paren-

chymatous inflammation of the tonsils and neighboring connective tissue. ' When this condition is associated with well-marked nervous symptoms, a severe case with ulceration of the fauces may be confidently predicted.

In general terms, it may be said that when the soft palate has a diffused red hue, "similar," as TROUSSEAU remarks, "to, but deeper than, that of the skin," while the tonsils are not involved; when with this is a very hot skin; a very quick pulse; vomiting; a tongue with thick creamy fur, red borders, and prominent papulæ; and with these symptoms, exposure to the presence of a scarlatinal epidemic, the physician need not hesitate in pronouncing it scarlet fever.

A very early symptom of scarlet fever has been insisted upon as strictly pathognomonic by an Irish physician, Dr. JOSEPH DUGGAN.* It is that the eye assumes a peculiar brilliant and glistening stare, very different from the liquid, tender, watery eye of measles, and which, once carefully noted, remains impressed on the observer's memory.

The character of the preliminary fever often differs. In scarlatina it is marked and high, which distinguishes it broadly from diphtheria which is apyretic at the outset; in measles it is of a catarrhal form; while in small-pox it is associated with often severe pain in the back and loins, not observed in the other exanthemata. This spine-ache is central in its position, and is less affected by change of posture than is the pain of lumbago, and is not confined to one side nor to the erector spinæ masses. It is stated by some authors that this pain is increased in proportion to the severity of the attack, and thus forms an important element in the prognosis; but this statement should be confined in its application to adults, as in children the rachialgia is less intense. Dr. WILKS observes that the most virulent cases of variola are almost apyretic and devoid of feverish symptoms.

In all the exanthemata, the eruption makes its appearance in the roof of the mouth, from *twelve to twenty-four hours*, and, in many instances longer, before it appears on the cutaneous surface. In *small pox*, in *scarlet fever*, in *measles*—in all their grades—the erup-

**Medical Press and Circular*, Feb., 1869.

tion may be looked for, with confidence, in this region long before it can be detected at any other point, and, as the eruption is often the last link in the chain of evidence necessary to decide a question of diagnosis, the knowledge of this fact will often relieve both physician and patient.

The eruption may, in small pox, often be *felt* before it can be seen. The sensation imparted to the finger is as if there were little shot underneath the skin. Its first appearance is as a simple red point or pimple, soon changing to a papule. The red blush of scarlatina disappears on pressure, but is immediately restored when the pressure is removed. It has not the least prominence to sight or feeling.

Dr. OSLER, of Montreal, has called attention to and described a number of *initial rashes*, which precede, by twelve to twenty-four hours, the appearance of the variolous eruption. They are principally noticeable on the upper part of the trunk, and generally have the similitude of a deep, suffused flush.

The *pulse* in variola is asserted, by some, to be pathognomonic, and significant so early in the disease that the malady can be positively diagnosed many hours before the eruption appears. But no definite descriptions nor tracings of this pulse have been given.*

Having thus defined the special indications for a diagnosis of these diseases in their earliest stage, we give in the following table a synopsis of their comparative history:

*See Dr. A. S. Payne, *Va. Med. Monthly*, March, 1878; J. S. Conrad, *Trans. of the Med. and Chirurg. Faculty of Md.*, 1874.

RÖTHELN.

SCARLET FEVER.

INCUBATION.

Period of incubation from one to two weeks.

Very uncertain; from a day to several weeks.

INVASION.

Languor; shiverings; nausea and vomiting; sore throat.

Shiverings; nausea, rarely vomiting; sore throat, sneezing and discharge from the nose.

Premonitory fever of short duration; relieved by the eruption.

Fever, with great heat of skin and very frequent pulse; not relieved by the eruption.

ERUPTION.

Appears early simultaneously over the *whole body*—is *sudden and general*—is less marked on the limbs than trunk.—*Aitken, Roberts, Fox, Copland.*

On second day; first on neck, and face and body; spreads rapidly to limbs.

May first appear upon the back, upon the chest or neck, upon the cheek or upon the forehead; travels downward.—*J. L. Smith.*

At first like measles—minute dots, which rapidly assume the appearance of large, irregular shaped patches, varying from three-cent piece to twenty-five cent piece in size.

These patches quickly become raised above the surrounding skin, especially toward the centre of the patch, and are of a darker red color at the centres.

Fades in about four days; without desquamation.

The eruption is uniform or in very large patches of a scarlet hue, with interspersed raised spots and some vesicles; the rash is followed after the seventh day of its appearance by complete desquamation.

MEASLES.

SMALL-POX.

INCUBATION.

Generally from seven to fourteen days.

Generally about ten days, but varies from five to twenty days.

INVASION.

Lassitude, shivering, catarrh; vomiting rare; sneezing, discharge from nose; harsh cough.

Shivering, severe pain in the back; nausea.

Fever, with hot skin and frequent pulse; rather increased by the eruption.

Fever often very violent, with bounding pulse and pain in the loins; great relief from occurrence of the eruption.

ERUPTION.

Appears on fourth day, first on face, spreads gradually in forty-eight hours to the rest of body.

Eruption at end of third or on fourth day; first on lips, palate and forehead.

Comes out in small circular dots, like flea-bites. These dots run together and form blotches, of a raspberry color, and the latter are very prone to assume a crescentic or horse-shoe shape, being slightly elevated above surrounding skin.

Eruption is first papular; after about a day becomes vesicular, then pustular; on the eighth day of the eruption, the pustules mature.

Eruption is sometimes diffused over the whole body in a confluent form, and "is of a dull, deep red color, offering a contrast to the crimson or scarlet redness of scarlet fever"—(*Flint*).

Lasts five days; followed by incomplete desquamation.

RÖTHELN.

SCARLET FEVER.

ACCOMPANIMENTS.

Sore throat ; hoarseness ; swelling of the neck ; coryza.

Sore throat ; coryza or bronchitis rare.

Cerebral symptoms absent.

Tongue red ; "raspberry" character. Cerebral symptoms frequent and grave.

THERMOMETRY.

"The temperature always highest on first day of attack, not exceeding 102° , next day falling to 100° , and getting normal on the fifth day." (*Fox.*)

"The temperature nearly always *sub febrile* (99.5° to 100.4°)—sometimes *febrile* (101.3° to 102.2°)."
(*Wunderlich.*)

Temperature may reach 105.6° , or even a higher point. It usually remains continuously higher during the eruption, and it is thus "well distinguished from those affections with which, on account of other symptoms, it is most easily confounded, and more particularly *measles and röteln.*" (*Wunderlich.*) It begins to subside about the tenth day.

No secondary fever.

No secondary fever.

DESQUAMATION.

Minute particles of cuticle, like scales of *fine bran*.

Always begins toward centre of the eruptive patch, and gradually extends to the circumference. (*Roberts, Aitken, Murchison.*)

Comes off in branny scales and in large patches. "Occasionally epidermis of the hands is detached entire, and may be slipped off like a glove. This is true also of the feet." (*Flint.*)

Sometimes several successive desquamations occur.

Frequently accompanied with itching, which in some cases is excessive.

COMPLICATIONS.

Pneumonia rare.

Pneumonia rare ; pleurisy more frequent.

SEQUELÆ.

Dropsy rarely ; swelling and supuration of the cervical glands common. (*Paterson.*)

Bright's disease, dropsy, conjunctivitis, deafness, phthisis, chronic diarrhœa, glandular enlargement.

MEASLES.

SMALL-POX.

ACCOMPANIMENTS.

Bronchitis, coryza and redness of the eyes, very constant; sore throat rare.

Sore throat and dry cough; bronchitis rare.

Tongue coated, or red at edges.

Tongue coated and swollen, or red at edges.

Cerebral symptoms, not severe.

Cerebral symptoms, especially convulsions in children, frequent.

THERMOMETRY.

Temperature during the preliminary fever may reach 105° – 106° . Within twelve to twenty-four hours from appearance of rash it sinks speedily to the normal. Protracted defervescence indicates a complication.

Temperature during the preliminary fever high, often 106° ; falls rapidly to about 100° after eruption. Rises again during the secondary fever and falls slowly; a slight rise during desiccation.

No secondary fever, though the fever may increase slightly before eruption leaves.

Secondary fever well marked in all cases.

DESQUAMATION.

Always in branny scales, not in patches or flakes.

In scabs, crusts and thick scales.

COMPLICATIONS.

Pneumonia is very frequent, especially in adults.

Pneumonia not very frequent.

SEQUELÆ.

Chronic bronchitis, phthisis, conjunctivitis.

Chronic diarrhœa, glandular enlargement, various diseases of the eyeballs and eyelids.

TYPHOID AND TYPHUS FEVERS.

Until within comparatively few years these two classes of fevers were confounded; and although now, in this country at least, they are distinctly recognized as wholly different diseased conditions, yet there are numerous instances where the clinical features of cases assimilate them to one or the other of these conditions, and yet fail to answer satisfactorily their currently received definitions. Such are the numerous gastric, nervous, simple continued, synochal, mixed, entero-miasmatic, typho-malarial, etc., types which are so often referred to in medical literature. So true is this that a skillful physician of Illinois writes: "I frankly acknowledge that I know but little, if anything, of the disease termed typhoid fever, as described by the majority of writers, European and American. I do not think I have seen a case in an active practice of over thirty years."*

There are, in fact, wide variations in the local features of this group of diseases, and it is the exception to find the classical portraits of one of the group, drawn in the hospital wards of great cities, correspond at all precisely to the case as seen modified by the numerous special conditions of particular regions. We shall cite some of these modified types, after having considered the early symptoms and broad distinctions of typhoid and typhus.

Typhoid fever is peculiarly a disease of slow and insidious approach. For days, and sometimes for weeks, the patient is ailing; and as this gradual onset is known to the public, the physician is often called upon to pronounce an opinion as to the probability of the threatenings being of typhoid long before any positive sign is present.

The general symptoms are a sense of weakness and fatigue, loss of appetite, muscular soreness, headache, generally dull, sometimes severe, disturbed sleep, poor appetite, low spirits. A characteristic and often early symptom is epistaxis. Frequently there is a bronchitis, with shallow and rather frequent breathing, with some sonorous râles over the chest. A skilled auscultator can often pronounce from the character of the râle as to the presence of typhoid. They yield

* Dr. R. G. Allen, *Medical and Surgical Reporter*, Vol. xxxii., p. 441.

a peculiar, dry, ringing sound. In one of his clinical lectures, Dr. DA COSTA remarks on this: "I should be loath to rest upon this symptom alone, but there is something about it that often makes the diagnosis of typhoid special and specific."*

The pathognomonic symptoms of typhoid are those connected with the abdomen. The belly is swollen and tympanitic; there is diarrhœa with cutting abdominal pains; rumbling and tenderness about the iliocecal valve and about the right iliac fossa. The tongue is tender, and sometimes moved with pain; the teeth show accumulations of dried mucus (sordes); thirst is rarely excessive; vomiting is rare; the mind is dull, and the delirium is usually low and muttering. The peculiar eruption appears on the chest and belly, most frequent between the nipple and navel, about the sixth or eighth day of the fever. It is in scattered small reddish spots, resembling flea-bites. Later they become rosier, and increase in area to the size of a finger nail. They are not elevated above the skin, and disappear entirely on firm pressure, but promptly re-appear. They give no feeling of hardness to the finger passed over them. These spots are, however, often wholly absent; and their presence, number and size do not seem to bear any relation to the severity of the attack.

The prodromal symptoms above mentioned are, however, often varied. Dr. A. LARRABEE, of Louisville, remarks that the characteristics of the prodromal stage, the lassitude, epistaxis, and even the susceptibility of the bowels to purgatives, which are valuable aids to early diagnosis in more northern latitudes, are not so important in the malarial regions of the southern and south-western United States;† and Dr. JÜRGENSEN, of Kiel, Prussia, has given the history of a number of cases, with the anatomical characteristics of typhoid fever, when the attacks were sudden, with a well-marked chill, a high temperature (104° Fah.) and quick pulse, swelling of spleen and little or no diarrhœa.‡

In *typhus* the eruption usually appears as small discrete spots, slightly elevated, of a dingy red color and fading on pressure. In a

**Medical and Surgical Reporter*, Vol. xxviii., p. 11.

†*Trans. Kentucky State Med. Soc.*, 1876, p. 123.

‡*Med. Times and Gazette*, 1874.

short time the spots cease to be elevated, and fade less completely on pressure, and a purple mottling appears in the interjacent portions of skin. At a still later period—say on the eighth, ninth or tenth day—the spots become entirely petechial, not being at all affected by pressure. The eruption begins to fade about the ninth or tenth day, and disappears about the fourteenth, and, if there be no local complication and the patient has not been very greatly prostrated, convalescence is established between that day and the twenty-first. In slighter cases, however, the serious illness may continue for only about a week, the eruption may never be very marked, and the patient may become convalescent from the tenth to the fourteenth day; while, in very severe cases, the rash may become petechial at an early period, and may continue on the skin till near the end of the third week, and the convalescence may be very greatly protracted. Generally, in a simple uncomplicated case of typhus, the pulse and temperature fall below the normal standard at the earlier period of convalescence, and again rise when the patient takes more food and is capable of some little muscular exertion. Usually the bowels are confined during the course of the disease, but such is not always the case; sometimes towards the height of the fever and when there is great prostration of strength, the bowels are relaxed, apparently from want of power in the sphincter to retain the fecal matter; but in some cases there is profuse diarrhœa during the whole course of the disease, and this independently of any medicine. It is impossible to base the diagnosis between typhus and typhoid upon the confined state of the bowels in the former disease and the occurrence of relaxation in the latter, for it is not uncommon for the bowels to be confined in typhoid. So, also, though, as a rule, the cerebral disturbance is more marked in cases of typhus than in typhoid, it sometimes happens that a patient will pass through a marked or even severe attack of typhus without much delirium, and retaining his intelligence to such an extent as to be able to answer simple questions put to him without any apparent difficulty. In such cases, however, the patient, on recovery, has no recollection of anything that has occurred from a very early period of his illness till convalescence is far advanced.

TYPHOID.

Age generally from eighteen to thirty-five.

Not contagious, or but feebly so; often sporadic.

Attack generally insidious.

Duration fully three weeks; often much longer.

Death hardly ever before end of second week; more generally in or after third week.

Cerebral symptoms come on gradually; last longer.

Great emaciation.

Face pale, or flush confined to cheeks.

Skin hot, sometimes covered with acid perspiration.

Abdominal symptoms, such as diarrhoea, tympanites; intestinal hemorrhage not unusual.

Epistaxis common.

Bronchitis and pleurisy.

Eruption light red and not on extremities.

TYPHUS.

At all ages, often in persons beyond middle life.

Highly contagious, generally epidemic.

Attack generally sudden; no lengthened prodromata.

Duration somewhat shorter; often not prolonged beyond second week.

Death not unfrequently at end of first week, and often before conclusion of second.

Delirium or decided stupor comes on soon, sometimes almost from the onset; headache has appeared and disappeared by about the tenth day.

Less emaciation; greater prostration.

Face deeply flushed, of dusky hue, eye injected.

Skin of pungent heat, sometimes emitting an ammoniacal odor.

No abdominal symptoms; bowels constipated; meteorism rare; no intestinal hemorrhage; sometimes acute dysentery during convalescence.

No epistaxis.

Pneumonia, or marked congestion of the lungs, and bronchitis of finer tubes.

Eruption darker color and all over the body.

Autopsy shows morbid state of Peyer's patches; enlargement of mesenteric glands; ulceration of mucous coats of intestines; enlargement and softening of spleen; ulceration of the pharynx.

No constant *post mortem* appearances; most common are dark-colored, liquid blood, and enlargement of the spleen; softening of heart more common than in typhoid; no intestinal lesions.

COMPARATIVE THERMOMETRY (DR. J. W. MILLER).

TYPHOID.

The duration of elevated temperature is very rarely less than twenty-one days; it is generally longer, and may be protracted to thirty-five days or even more.

The evening temperature is almost constantly higher than that of the morning.

The difference between the morning and evening temperature is generally, throughout the case, greater than in typhus; and towards the end of the fever there occurs the very characteristic oscillation of temperature, during which the difference is frequently five, six, or even seven degrees, and which may continue from a few days to a week or more.

A high temperature is frequently accompanied by a pulse but slightly accelerated, and occasionally by a pulse slower than normal.

TYPHUS.

The duration of elevated temperature is very rarely beyond eighteen days; it is generally shorter by several days, and may be even so short as nine days.

The evening temperature is frequently lower than that of the morning.

The difference between the morning and evening temperature, during the height of the fever, or from about the third to the tenth or eleventh day, is comparatively seldom above one degree, and although about the period of defervescence the difference is sometimes much greater; the oscillation is not continued over more than one or two days.

A high temperature is, as a rule, accompanied by a high pulse.

The varieties of fever called *gastric* and *nervous* have not been recognized as distinct types by the most recent writers. Yet there is no doubt that many cases of continuing fever present gastric rather than abdominal symptoms, and various other perceptible variants from the type of a mild typhoid. The following semeiological table, drawn from Dr. COPLAND's work, will illustrate this:

SIMPLE CONTINUED
FEVER.

100-120, small, weak, irregular; intermittent when a dangerous attack.

Heat of surface generally rises over 100°.

White, foul, loaded or furred; again red at its sides, and point loaded with dirty yellow fur.

Tenderness at epigastrium; looseness or diarrhoea of an ochery hue; vomiting early.

Pain in head, throbbing of arteries, brilliant expression of eyes, marked acuteness of senses, watchfulness and restlessness, moaning and incoherent muttering, dilated pupils, and coma.

A common and early complication, either to bronchial surface or congestion of substance.

Sore-throat or inflammation of fauces sometimes accompany.

By subsidence of the prominent morbid actions indicative of a gradual decline.

Pulse.**Temperature.****Tongue.****Gastric
Symptoms.****Symptoms.****Lung
Symptoms.****Affection of
Throat.****Crisis.**

NERVOUS FEVER.

Soft, feeble, and quick; about eleventh day very quick and unequal.

Heat of skin natural and diminished.

Loaded or covered with a dirty mucus, afterward brown or black, incrustated or fissured.

Fetor of the breath and of the discharges, an irregular relaxed state of the bowels, pain at the epigastrium, nausea and vomiting.

Countenance pallid or transiently flushed, head heavy, continual restlessness, want of sleep, tremor, hearing dull, coma, unconscious evacuations, low delirium, early stupor and delirium.

The bronchial surface is the part chiefly affected; substance of the lungs sometimes complicated.

Sore-throat, occasionally so severe as to resemble an attack of anginose maligna.

Often announced by a true crisis.

Gastric fever is recognized by NIEMEYER and other competent authorities as a separate type. It commences with loss of appetite, headache and languor followed by a slight chill, with marked gastric irritability, great nausea, frequent vomiting, and constipation. There is considerable tenderness on pressure over the stomach, a low pulse (60 to 70 per minute), and a temperature at first rising slightly (to 100° Fah.), then falling below the normal as the disease advances (to 95° and even 90°). A grave symptom is double vision or total loss of vision. There are no tympanites, diarrhoea, delirium, subsultus tendinum, spots, iliac tenderness, nor sordes, as in typhoid. Women are more liable to it than men, old persons than those of middle age or youth. Its outbreaks indicate it to be a zymotic disease, and the

mortality is even higher than in typhoid. The pathognomonic symptom of the disease is the peculiar sweetish odor of the breath; it is likened by some to the odor arising from hot water poured on garlic, having a slightly alliaceous odor; or, according to others, it resembles a faint aroma of valerianic acid.*

Typhlitis can readily be distinguished from typhoid fever by the pathognomonic sign of a dense tumor in the iliac fossa, increasing, and exceedingly tender on pressure.

TYPHOID AND MALARIAL FEVERS.

TYPHO-MALARIAM (WOODWARD), ENTERO-MIASMATIC (WOOD), OR
REMITTO-TYPHUS (DRAKE) FEVER.

The experience of numerous observers has proven that there is a complex form of fever prevalent in malarious districts, in which the typhoid and miasmatic elements are combined. It has been proposed by Dr. J. J. WOODWARD to call this "typho-malarial fever," a term which he explains to be applied "not to a specific or distinct type of disease, but to the compound forms of fever which result from the combined influence of the causes of the malarious fevers and of typhoid fever."†

In order to bring into relief the broad distinctions between the typhoid and malarial fevers when in their typical forms, the following comparative table has been prepared by Dr. E. M. HUME: ‡

TYPHOID.		MALARIAL.
Decomposing animal and vegetable matter.	Cause.	Emanations from marshes, damp, low or new soil; always vegetable, never animal.
Old soil; may be high and dry and long settled.	Locality.	New land, moist, low and swampy.
Epidemic of typhoid fever.	Circumstantial Evidence.	Prevalence of malarial disease.

*Dr. G. B. Bullard, *Trans. of the Vt. Med. Soc.*, 1877, pp. 52-56.

†*Transactions of the International Medical Congress*, 1876, p. 340.

‡*Peninsular Journal of Medicine*, Feb., 1875.

TYPHOID.

MALARIAL.

Seldom after forty.

Continued without intermission or remission.

Lasts three or four weeks; cannot be interrupted.

Great nervous disturbance and prostration; dull, heavy, throbbing, persistent frontal headache; twitching of muscles; tickling of throat; ringing in ears; deafness; mind stupid.

Asthenic, not wild.

Frequent.

Diffused bronchitis with tough, tenacious sputa.

From 70 to 140 beats per minute, small, irregular or double.

Hot, even when moist; emits a peculiar, musty odor, pathognomonic of this fever.

Indicates an increase of temperature from morning to evening of about 2 deg., and a decrease of 1 deg. from night to morning; commences first day 98.5 deg., reaches its maximum of 104 deg. on the morning of the fourth day; from this time the evening temperature ranges between 103 deg. and 104 deg., morning 1 deg. lower.

Protrudes tremblingly; is covered with a whitish yellow coat, which disappears and is replaced by a dry, pale brown one, with red glazed tip and edges; teeth covered with dark brown sordes.

Pale, livid, muddy; cheeks flushed.

Foaming, light color, free from sediment; frequently contains albumen; has typhoid odor like body.

Age.

Periodicity.

Duration.

Nervous implication.

Delirium.

Epistaxis.

Lungs.

Pulse.

Skin.

Thermometer.

Tongue.

Complexion.

Urine.

All ages.

There is either intermission or remission.

Can be interrupted and cured in a few days.

None.

Sthenic.

None.

Congested, when affected at all.

More frequently high, full and bounding.

Dry and hot, odor acid and swampy.

Rises rapidly to 105 deg. or more first day or two, and falls suddenly; is not so uniform.

Coated all over with a heavy, dark, yellow coat. No sordes.

Sallow; eyes yellow.

Dark color, turbid, no albumen.

TYPHOID.

Diarrhœa, except in mildest cases; stools offensive, pea soup, bright yellow or brown; devoid of mucus, but sometimes contains a whitish flocculi.

Tympanitis occurs, giving tub shape to abdomen; pressure over cæcum produces pain and gurgling sound; tenderness over spleen.

Stomach not involved; no severe pain anywhere, except where peritonitis occurs.

Occurs during second week; from one to twenty small rose-colored pimples, size of pin head, appear on abdomen, chest or back; do not extend to extremities; present no distinct elevation to the touch, disappearing upon pressure, but reappearing upon its removal; lasts about three days; fade away and a fresh crop appears. This eruption is claimed to be "peculiarly and absolutely diagnostic of typhoid fever." Later in the disease sudamina appear.

Great—averages one in five.

Inflammation and ulceration of Peyer's, solitary and Brunner's glands; perforation of bowels with peritonitis, and fatal hemorrhage; inflammation and enlargement of mesentery glands and the spleen (which sometimes burst); the brain, stomach, liver and lungs sometimes inflamed.

We shall now consider the character of a disease presenting in its different stages symptoms both of malarial and typhoid fever. The name *Remitto-Typhus* was given it by Dr. D. DRAKE, who also spoke of it as "the typhoid stage of remittent or autumnal fever." He does not consider it a distinct disease, but a genuine hybrid of typhoid and remittent fevers. He remarks that in many cases the stage of invasion is nearly the same length in both; both attack males

MALARIAL.

Excretions from Bowels.

Bowels costive; dark, hard, dry, bilious stools.

Abdomen—shape, etc.

No tympanitis or tenderness of abdomen.

Pain.

Gastric disturbance and vomiting of bile; pain in stomach and elsewhere very intense.

Eruption.

Eruptions of different kinds sometimes occur, but are so different in shape, feel, duration, number, extent and place, that they need never be mistaken for the typhoid eruption.

Mortality.

Very slight—not one fatal case in a hundred.

Lesions.

Hemorrhage from congestion of bowels rare; congestion of stomach, lungs, liver and spleen, the two latter sometimes become enlarged.

more than females; and that when remittent terminates fatally, subsultus tendinum, a dry tongue and intestinal hemorrhage are sometimes present. He has, however, never seen a decided intermittent pass into typhoid; nor well-marked typhoid terminate in an intermittent.*

Pending and since the war, typho-malarial fever has attracted much attention, and its traits have been thus distinguished against simple typhoid.

TYPHOID.

Occurs in all localities, most common in the north.

Invasion gradual and without remittance.

Daily exacerbation and remission slight.

Diarrhoea the rule. Tympanites common. Abdominal tenderness considerable; epigastric and hepatic tenderness slight.

Temperature comparatively low. Delirium low and muttering.

Spleen not involved.

Sordes on the teeth the rule.

Peyer's glands always involved.

Rose colored eruption present.

Pigment deposits absent.

TYPHO-MALARIAL.

Only in miasmatic localities; most common in the south.

Often begins as simple intermittent or remittent.

Decidedly marked.

Constipation the rule. Tympanites rare. Abdominal tenderness slight; epigastric and hepatic tenderness considerable.

Temperature high, especially at outset. Delirium active.

Tumefaction of spleen very marked.

Sordes rare.

Rarely involved.

Generally entirely absent.

Pigment deposits in various tissues and organs very common.

THE TYPHOID STATE.

It is a common error to confound the typhoid condition which occurs in many diseases with typhoid fever, properly so-called. This typhoid state may be developed in typhus and typhoid fever, in acute

**Diseases of the Interior Valley of North America*, p. 556.

pneumonia, rheumatism, tuberculosis, pyæmia and various renal diseases, especially the granular or gouty kidney, and Bright's disease. The exciting cause in all these cases, it is believed, is the accumulation in the blood of the products of disintegration of the nitrogenous tissues.

The so-called "typhoid symptoms" are a quick, soft pulse; a dry, brown tongue; the symptoms and physical signs of hypostatic congestion of the lungs; impairment of the mental faculties; stupor passing into coma; delirium, which is at one time acute and noisy, at another low and muttering, and not unfrequently associated with muscular tremor; involuntary evacuations. The skin is dusky, moist and often emitting a fetid odor. There is little thirst and often difficulty in swallowing. The temperature and urine vary considerably. The respirations are shallow and somewhat accelerated. The bowels are sometimes constipated, but often relaxed with offensive evacuations.

The difference between this condition, as it supervenes in the above named diseases, and true typhoid, or continued fever, may be thus presented:

THE TYPHOID STATE.

Arises in the course of an antecedent local disease

Is always traceable to blood poisoning from deficient elimination.

These symptoms generally absent.

May be a diffused rosiness from dilatation of superficial capillaries, but nothing like the *taches rouges*.

Rare.

Not usual, except in malarious cachexia.

Urine may show albumen or pus.

TYPHOID FEVER.

Begins without any history of preceding disease.

Can often be traced to an external zymotic or septic influence.

Diarrhœa, tympanites, epistaxis, tenderness over intestinal glands, pain in iliac fossæ.

Eruption of rose-colored spots.

Intestinal hemorrhage not infrequent.

Enlargement of spleen very constant.

Albumen and pus not present.

MALARIAL FEVERS.

The characteristic symptom of all malarial diseases is *periodicity*. It is not, however, pathognomonic; for hectic and syphilitic fevers, neuralgia and certain hysterical diseases, simulate this trait very closely. The diagnosis, however, in most instances is facile:

Intermittent begins with a chill, cold extremities, pale face, chattering teeth and pulse feeble; followed by a decided fever, the face flushed, the skin hot, the pulse full and rapid; and ends with a profuse perspiration, soft, moderate pulse, and restoration of the secretions. This recurs at definite intervals, with complete intermission between times.

In *Remittent fever* we find the same development of the phenomena, the chill, the fever, the perspiration, but without complete abatement of the febrile symptoms in the interval. They continue, though lessened, and usually have daily exacerbations.

Between these two most common forms there are the differences that in intermittent the patient is well between the paroxysms; in remittent he continues ailing: in intermittent a distinct chill precedes each attack; in remittent the chill is slight or absent: in intermittent the appetite is good between the invasions; in remittent nausea and anorexia are present. Dr. DANIEL DRAKE says: "If we suppose an ague shake to be reduced to a mere chill, but the subsequent hot stage aggravated and prolonged, we shall form a just conception of the relations, in symptomatology, between intermittent and remittent fever." *

The more intense cases of malarial poisoning develop *algid pernicious or congestive chills, malignant remittent fever, and malarial hemorrhagic fever*.

In *congestive chill* the symptoms of an ordinary intermittent are present, but in an exaggerated form. The chill is intense, the skin and even the breath seem cold; the face is cadaveric; the respiration is sighing; the pulse scarcely distinguishable; the shivering shakes the bed. When the stage of fever comes on, the pulse is full and so quick that it can scarcely be counted; the skin of the body is hot

* *Diseases of the Interior Valley of North America*, p. 95.

while the feet and hands are cold; delirium is active; thirst intense; the stomach is irritable. The perspiration that follows brings no relief; the patient lies prostrate and sometimes unconscious. When the congestion affects the lung, there is a sense of smothering, difficult breathing, and bloody expectoration; when it attacks the stomach and bowels there are violent spells of vomiting, foaming or soap-like white discharges, and great epigastric tenderness. In these cases the mind is usually clear; but when it is the brain which is involved, there is intense headache, the mind is dull or delirious, and coma is apt to supervene. Patients rarely survive the third chill of this intensity.

The diagnosis of *malignant remittents* has been carefully set forth by Dr. DANIEL DRAKE as follows:

1. The pulse does not rise in fullness and force during the exacerbation, as in other forms of remittent fever, but is generally small, frequent, weak and variable. When the remission begins, it generally improves slightly, but to a much less extent than in mild remittents.

2. The feeling of abdominal oppression, and the anxiety, restlessness and gastric irritability, are deeper in this than in other forms of remittent fever; and these symptoms never entirely cease during the remission.

3. A coldness in the hands and feet, or of the ends of the toes and fingers only, continues through the hot stage, while the trunk of the body and the head are in high fever heat. With the arrival of the remission this coldness, in milder cases, is replaced by a natural temperature; but in the more malignant it continues. Many experienced physicians regard this as the most characteristic sign of malignant remittent.

4. There is no time when the fever is absent; and whatever irritations or congestions are formed in the cold stage, and whatever inflammations are set up in the hot stage, remain, though moderated in degree, throughout the remission.*

Hemorrhagic malarial fever commences with a chill of the congestive type; and during the first paroxysms the symptoms which distinguish this from all other fevers usually make their appearance.

**Diseases of the Interior Valley of North America*, p. 113.

These are jaundiced skin, and vomiting, apparently without any effort, of a dark fluid; the fæces dark, offensive, and tawny looking; the color of the skin yellowish or bronzed, and the *urine colored with blood*. The last mentioned is pathognomonic. Sometimes the urine is profuse, though mixed with blood, which is a favorable symptom. Most of such cases recover; but when the urine grows scanty, and suppression ensues, the result is always fatal.* The remissions are irregular and often ill-defined; and after the hot stage there is no perspiration.† Pain in the back is severe and incessant; the stomach is irritable, and the mental powers often obscured.

The *tongue* presents in malarious diseases some peculiar appearances. One of these has been described as follows by Dr. WM. A. LOVE, of Atlanta:‡

While the appearance of the tongue indicative of physiological and pathological conditions of the alimentary mucous membrane, presents itself on the upper papillated surface—the *border* and *outer edges* present the peculiarity indicative of malarial toxæmia. It consists in a peculiar *pectiniforme* appearance of the edges of the tongue, as though these edges had been under the pressure of the sides of the teeth of a comb—just as, in certain “languid and flabby” states of the *primæ viæ*, we find the edges presenting a crenated appearance, produced by the indentations resulting from the pressure of the teeth in the oral cavity—just within this *pectiniforme edge*, making the outer border of the upper surface, of greater or less width, in different cases; or in different degrees of malarial toxæmia, there appears a *smooth margin*, both the *pectiniforme edge* and the *smooth margin* presenting a *cleaner appearance* and a *brighter hue* than the other portions of the surface of the organ.

A characteristic color of the tongue in malarial poisoning has been adverted to by Professor CHARLES O. CURTMAN, M. D., of St. Louis. He describes it as almost uniformly present. The color of the dorsum of the tongue as far back as the circumvallate papillæ is of a bluish gray tinge, somewhat resembling that of old sheet zinc or lead.

*Dr. GREENSVILLE DOWELL, *Yellow Fever and Malarial Fever*, p. 213.

†Dr. THACKER, *Cinn. Med. News*, 1872.

‡*Trans. of the Med. Association of Georgia*, 1878.

It occurs in various degrees of intensity, giving the impression of a coloring of greater or less thickness, superimposed upon the epithelial surface, sometimes quite thin and transparent, at other times almost opaque. In some cases this hue is observed without any other pronounced symptoms of malaria; but in all such the distinct malarial symptoms follow. The disappearance of this color serves as a valuable index of the perfect restoration to health.*

The symptoms of malarial poisoning are multiform, and are frequently so masked and disguised that the closest observation fails to detect their origin. This is the condition of *malarial toxæmia*. It is broadly characterized by a tendency to cerebral, thoracic and abdominal congestion, obstinate to ordinary remedies, and often slightly periodic in exacerbations. Bronchitis, diarrhœa, simple fever, toothache, neuralgia, ophthalmia, urticaria and other skin diseases, even hæmopystis, hysteria and rheumatism, may all be simulated by this subtle poison.

Careful examination will sometimes disclose evidence of periodicity in an increase of suffering at regular periods; sometimes at intervals of several days, or even weeks, apart; or they may be regularly aggravated at morning, noon or night. Sometimes subordinated to the prominent symptoms, and apt to be overlooked by the patient unless particular inquiry is made, are slight recurrent headaches, intolerance of light, shiverings, or a sense of cold, or alternating heat and cold, or perspirations. A trace of blood in the urine, especially in the tropics, is a common indication of malaria. Nausea or vomiting, or a copious watery discharge from the bowels at periodic intervals, are often observed, especially in children.† The skin is harsh, dry, and presents a muddy or else a greenish-yellow hue, which is most noticeable on the face, neck and arms. The appetite is capricious, the strength easily exhausted, the temper irritable, the mind readily depressed, and the energies diminished. On careful percussion the spleen is nearly always found to be decidedly, and the liver slightly, larger than in health.

* *St. Louis Med. and Surg. Journal*, 1869.

† See an article on Infantile Malarial Toxæmia, by Dr. JOEL C. HALL, in the *Medical and Surgical Reporter*, Vol. xxxi., p. 147.

The condition of the blood in malarial poisoning has been studied with definite results. Dr. A. KELSCH has found that the white corpuscles diminish during an attack to one-half or one-third of their normal number, and continue less than usual so long as there is splenic enlargement.* The microscope also discloses granules of pigment matter floating in the blood. They are irregular angular masses, usually from one-half to one-fourth the size of the red corpuscles, dark in color and easily recognized.†

CEREBRO-SPINAL MENINGITIS (SYN. EPIDEMIC MENINGITIS, SPOTTED FEVER).

The onset of this disease is usually sudden, beginning with a severe chill, vomiting and intense headache, and an elevation of pulse and temperature. The pathognomonic symptom is that *the head is drawn backwards and downwards, and the muscles at the back of the neck are rigidly contracted*. The pupils are also contracted.

At an early period herpes appears on the face and limbs, the skin is hyperæsthetic, and the patient cannot bear handling. After about four days convulsions set in, tetanic contractions make their appearance, stupor follows, passing into a coma, preceding dissolution. The bowels are persistently constipated, and the urine passes involuntarily.

In cases tending toward recovery, the acute symptoms subside after a week or two, and convalescence takes place, attended by headache and muscular contraction.

In regard to differential diagnosis, it may be simulated by typhus or masked variola. The absence of tetanic spasms of the post-cervical muscles in these diseases will aid in recognizing them. The protracted cases, where this symptom is not prominent, may resemble typhoid fever. In both there is an eruption, some similar cerebral symptoms, and occasionally intercurrent diarrhœa. But the invasion of cerebro-spinal meningitis is more sudden, the headache more violent, and there is vomiting and constipation; while later the spinal pain, the herpes, the tetanic spasms and the continued headache, are broad distinctions.

* *Archives de Physiologie*, Oct., 1876.

† For particulars see J. F. Meigs, *Pa. Hospital Reports*, Vol. I.

True tetanus is distinguished by the absence of epidemic prevalence, by the clearness of the mental powers, and by the history of the case pointing to some injury.

Certain forms of malignant malarial fever counterfeit cerebro-spinal meningitis, especially during convalescence, when the affection presents periodical intermissions of the febrile state. The points of difference may be summed up as follows (HAMILTON):

CEREBRO-SPINAL MENINGITIS.	CONGESTIVE PERNICIOUS MALARIAL FEVER.
Inceptive chill not marked.	Chill quite marked.
Disease epidemic, and chiefly among children.	Epidemic and common to all ages.
Muscular spasms the rule.	Muscular spasms very rare.
Bowels constipated.	Not usually so.
Pulse and temperature do not suffer rapid variations.	Both subject to great variations, feeble and irregular.
Temperature does not undergo periodical changes.	Undergoes decided periodical changes.
Face flushed; eruption before fourth day.	Complexion sallow; no eruption.
Delirium and coma not affected by large doses of quinine.	All symptoms modified usually by large doses of quinine.
Increase of fibrine and rapid coagulation of blood when drawn.	

In distinguishing it from other head affections it should be observed that, while pain in the head, vomiting, epileptiform attacks, disease of the optic discs, emaciation, eruptions, involuntary micturition, are symptoms found in many of them, the sudden onset of symptoms, pain in the back of the neck, the stiffness of the muscles of the neck, and retraction of the head, are sufficient to separate cerebro-spinal meningitis from *hydrocephalus acquisitus*, *basilar meningitis*,

and tumor of the brain, diseases to which, in its symptoms, it is nearly allied.

It may also be noted that Dr. HAYDEN, of Dublin, a competent authority, states that he never saw a case of cerebro-spinal meningitis unattended by *pains in the calves of the legs*, and he should make a presumptive diagnosis from the presence of that symptom alone.

Dr. DOWSE, of London, has insisted on the importance of distinguishing *sporadic* from *epidemic* cerebro-spinal meningitis. He maintains that in its epidemic form the sensorium is more or less affected from the first, and that the membranes over the superior cerebral convolutions, cerebellum, and posterior columns of the cord, including the nerve substance, are primarily, if not wholly, the seats of lesion. In the sporadic form, on the contrary, the sensorium and special senses are only slightly influenced, and the inflammation centres itself upon the meninges at the base of the brain and the anterior columns of the cord. He therefore gives to the latter affection the name of *occipito*, or *basic cerebro-spinal meningitis*, in contradistinction to the former well-known disease. He draws his conclusions and diagnosis from signs and symptoms, as evidenced in the following table:—

EPIDEMIC CEREBRO-SPINAL MENINGITIS.	SPORADIC OR BASIC CEREBRO- SPINAL MENINGITIS.
Attack sudden, without any special predisposing cause.	Attack commences gradually and resembles an onset of acute rheumatism.
Apparently of a contagious or infectious origin.	Usually arises from exposure to cold, exhaustion, and privation.
Sensorium affected from the first.	Sensorium never affected until the last stage.
Excito-motor spasms of a tonic character in groups or groupings of muscles, with marked loss of cutaneous and muscular sense.	Incoordination of movement with cutaneous formication, partial anæsthesia, muscular hyperalgia, but no tetanic spasms.
Reflex movements common.	Reflex movements rare.
Vomiting urgent and uncontrollable.	Vomiting not so severe.

Temperature rarely exceeds 100°.	Temperature often rises to 105°.
Purpuric maculæ diffuse and general	Maculæ never seen in the desudate form.
Death usually takes place from coma.	Death usually takes place from apnoea.
Prognosis grave.	Prognosis hopeful.
Post mortem appearances reveal the membranes over the superior cerebral convolutions and posterior columns of the cord as the seats of lesion.	Post-mortem appearances reveal the membranes over the base of the brain and anterior column of the cord as the prime seat of lesion.

This distinction has, however, not been wholly accepted by American authorities. Dr. DA COSTA questions the main point of difference—the temperature; and Dr. ALFRED STILLÉ writes: “The whole medical literature does not contain a single case of *sporadic* idiopathic cerebro-spinal meningitis with the characteristic *sudden onset* of the epidemic disease.” From that writer’s admirable monograph* we extract the following exhaustive comparison of meningitis and typhus, with which latter it has often been confounded:

EPIDEMIC MENINGITIS.	TYPHUS.
A <i>pandemic</i> disease; occurs in places remote from one another and without intercommunication.	Essentially an <i>endemic</i> disease. Always due to local causes. Spreads by intercommunication only.
Attacks all classes of society. Is never primarily developed by squalor and deficient ventilation.	Attacks primarily the poor, filthy and crowded alone.
Is not contagious.	Contagious in a high degree.
More males than females attacked.	The two sexes equally affected.
More young persons than adults attacked.	More adults than young persons.
Generally occurs in winter.	Epidemics irrespective of season.

**Epidemic Meningitis*, pp. 107, 117.

MENINGITIS.

Eruptions are wanting in, at least, half the cases; they occur within the first day or two.

The eruptions are very various, including erythema, roseola, urticaria, herpes, etc. Ecchymoses are common.

Headache acute, agonizing, tensive.

Delirium often absent; often hysterical, sometimes vivacious, sometimes maniacal. Generally begins on the first or second day.

Pulse very often not above the natural standard; often preternaturally frequent or unfrequent. Is subject to sudden and great variations.

The temperature is lower than that recorded in any other typhoid or inflammatory disease. It is also very fluctuating. •

The body emits no peculiar smell.

The tongue is generally moist and soft; sordes of the teeth, etc., is rare.

Vomiting, generally of bilious matter, is an almost constant and urgent symptom, especially in the first stage.

Pains in the spine and limbs of a sharp and lancinating character are usual, and evidently neuralgic.

TYPHUS.

The eruption is rarely absent, and appears between the fourth and the seventh day.

The eruption is uniformly roseolous, and then petechial. Ecchymoses are rare.

Headache dull and heavy.

Rarely absent; usually muttering. Rarely begins before the end of the first week.

A slow pulse exceedingly rare; its rate pretty constantly between 90° and 120°.

The temperature is always more or less elevated, and it does not fall until the close of the disease. The skin is hot, burning and pungent to the touch.

The mouse like odor of typhus is characteristic.

The tongue is generally dry, hard and brown, and the teeth and gums fuliginous.

Vomiting is rare and not urgent. •

Pains are dull, heavy, and apparently muscular.

MENINGITIS.

Tetanic spasms in a very large proportion of cases, and within the first two or three days.

Cutaneous hyperæsthesia a prominent symptom.

Strabismus common. The eye, if injected, has a light red or pinkish color. The pupils are often unequal.

Deafness is often complete and permanent.

Duration very indefinite; but generally from four to seven days.

The blood is often highly fibrinous.

The lesions, unless in the most rapid cases, consist of a fibrinous or purulent exudation in the meshes of the cerebo-spinal pia mater.

Mortality from 20 to 75 per cent.

TYPHUS.

Tetanic spasms are unknown in typhus. Convulsions sometimes occur, due to pyæmia.

The sensibility of the skin is generally blunted.

Strabismus rare. The blood in the conjunctival vessels has a dark hue; the pupils are always equal.

Deafness is hardly ever permanent, or attended with signs of disorganization of the ear.

Duration from twelve to fourteen days.

Blood never fibrinous.

There are no inflammatory lesions whatever.

Mortality from 8 to 40 per cent.

ACUTE TUBERCULAR (GRANULAR) MENINGITIS.

This serious disease is apt to be confounded, especially in the adult, with typhoid or typhus fever, the exanthemata and pneumonia. The following characteristics of the disease, as given by Drs. REGINALD SOUTHEY and HAMILTON, will serve to distinguish it:

1. The prodromal symptoms of this form of meningitis are well marked. The history of the case usually records an illness that has endured some two or four weeks, but one which has not attracted much attention until distracting headache, with some delirium at night, has supervened.

2. Vomiting is generally the first and most important symptom. Headache is invariably present.

3. After two or three days there is a marked rise of temperature, say from 101° to 105° , with greatly increased pulse.

4. The bowels are constipated and not tender to firm pressure. Very little nourishment is voluntarily taken. The abdomen becomes retracted, and the aspect of the patient, with half-open eye-lids, or some slight paralysis of these, becomes highly diagnostic.

5. There is no characteristic rash. The so-called *tâche cérébrale* of this form of meningitis is not a true eruption, but is produced by pressure or contact. When the finger is drawn across the skin it leaves a vivid red mark, which has been considered a pathognomonic sign of the disease.

6. The skin is hyperæsthetic, the delirium slight and transitory, the temper obstinate and unaccommodating,

7. There are general muscular pains, followed first by stiffness, and then by slight paralysis, as shown in the imperfect co-ordination of the muscular movements, in tremblings and in twitchings. The muscular pain and stiffness are often first complained of in the nape of the neck, and then in the muscles of the back.

8. Slight epileptiform convulsions are observed, followed by paralysis of motion in the limbs or parts convulsed; this paralysis being most usually of a transitory or temporary kind. Among the paralyzes most characteristic are those affecting the optic commissure and oculo-motor tracts, causing a slight internal squint, with dilated inactive pupil of one eye, with drooping of the same eyelid, and paralysis of the facial nerve upon one side. The paralysis of the limbs, although usually a hemiplegia, is seldom one that invades the body upon one side in its entirety. Further, its mode of attack is gradual; usually, the arm and leg are affected upon the same side, but the facial muscles are not involved.

YELLOW FEVER.

The name *Yellow Fever* is misleading, as the coloration of the skin to which it refers is not an invariable nor even a common sign of the disease. According to Dr. GREENSVILLE DOWELL,* the skin does not turn yellow in more than one case in six, and many die before there is the least appearance of yellowness even in the eyes. Of those

* *Yellow Fever and Malarial Diseases.*

who die after the black vomit has set in, not more than one in three presents the yellowness.

The pathognomonic sign of the disease is the *black vomit*. It is brownish black, semi-fluid, with a glistening reflection and acid reaction, and varies in quantity from a mere stain on a handkerchief to many pints in the twenty-four hours. It, however, is not thrown up in more than one in three fatal cases.

The usual course of the disease as witnessed in the southern and southwestern states is as follows :

1. Onset with a chilly feeling along the spine passing into actual rigor.
2. Pain in the head, severe in proportion to the malignancy of the disease.
3. Fever slight, tending to perspiration.
4. Remission after a period varying from twenty-four hours to five days.
5. The secondary fever, commencing usually without a chill ; it runs an indefinite course.

The coloration of the skin begins at the white of the eye, and extends over the forehead, chest, abdomen, and extremities. The urine is high-colored and stains linen, and in some cases the perspiration gives the same yellowish stain.

The shades which separate the symptoms of one fever from those of another, in warm climates, are sometimes of such gentle gradation that *primâ facie* they seem to belong to one and the same disease, and this more especially refers to the yellow and remittent class of fevers, between which so slight is sometimes the distinction, that remittent has frequently been considered and classified as true yellow fever; for in the prominent symptoms which present in both yellow and remittent fever a great similarity obtains; both take their origin in paludal soils, both in their course offer symptoms of so seemingly similar a nature, that the shades which differentiate them are so slight as to frequently escape the conscientious observer and cause him to fall into indefensible interpretations. But this apparent similarity vanishes on close and continuous inspection, for then essential and distinctive marks are observed, which stamp each with an individuality, and which characterize each as a separate disease, distinct in its essence and dif-

fering significantly one from the other. These differences may be summarized as follows (J. J. L. DONNET, DA CÔSTA, DOWELL, and others):

YELLOW FEVER.

Is essentially of an infectious nature, and found in cities.

Chiefly vigorous and young constitutions fall victims to it. Colored population less liable than white.

Restricted chiefly to the yellow fever zone.

Is of a continued type; remissions not marked.

Usually attacks at night.

Severe nausea and vomiting throughout. Epigastric tenderness early and decided black vomit. Headache occipital.

Hemorrhages from the gums and various parts of the body.

Tongue clean or but slightly coated; pulse variable, becoming slow in the last stages.

Eye highly injected and humid; expression often fierce or anxious.

Pain in the back very severe; also pain in the calves and over the eyes.

Delirium rare; mind generally clear.

Urine generally albuminous; suppression common.

Muscular prostration slight; convalescence rapid; no sequelæ.

BILIOUS REMITTENT FEVER.

Is not of an infectious nature, and usually found in the country.

All ages and constitutions are liable, and the weakest most so. Colored population as liable as white.

Is to be found in all parts of the world where marshy soils prevail.

Remission observed in the morning

Usually attacks in daytime.

Nausea and vomiting moderate. Epigastric tenderness slight. Headache frontal

No hemorrhagic tendency.

Tongue heavily coated; pulse varies little, remaining quick until convalescence sets in.

Eye and physiognomy not peculiar.

Rachialgia slight or absent; headache moderate.

Delirium frequent; mind always dull.

Albuminous urine rare; suppression also rare.

Much muscular prostration; convalescence slow; sequelæ various and tedious.

YELLOW FEVER.

Liver affected.

Spleen not affected.

One attack affords an almost certain immunity.

Mortality very high.

Peculiar smell often perceptible.

Never merges into intermittent.

Treatment unsatisfactory; quinine useless.

Autopsies show great congestion, inflammation, ulceration and softening of the stomach. Liver enlarged, yellowish in color, its secreting cells filled with oil globules. Heart often exhibits disintegration of the muscular fibres.

BILLIOUS REMITTENT FEVER.

Liver not affected.

Spleen invariably affected.

One attack seems rather to predispose to others.

Mortality slight.

No peculiar smell observed.

Often merges into intermittent.

Quite amenable to treatment; antagonistic power of quinine beyond question.

Autopsies show congestion of the stomach, but rarely inflammation. Liver of an olive or bronze hue, not fatty. Spleen enlarged.

RELAPSING FEVER.

Of late years epidemics of this disease have appeared at various points in this country. It is eminently contagious in character, and a physician should be prepared to recognize it early. The invasion is sudden, the fever soon developed and high, the pulse very rapid, the skin often jaundiced, and the temperature elevated (106° – 107°). Toward the close of the first week the symptoms rapidly subside, and convalescence seems at hand; but after about another week the symptoms all return with as much violence as ever, to again disappear, as a rule, after four or five days.

The epidemic prevalence of the disease, its sudden invasion, the persistence without remission of the high febrile symptoms, give it a peculiar physiognomy.

The characteristic feature of the disease, asserted by some to be truly pathognomonic, is the presence of *spirilla in the blood*. The fol-

lowing method of demonstrating them is that recommended by Dr. R. ALBRECHT, of St. Petersburg:*

Spread out a drop of blood on a slide, not too thin; let it dry; treat it with a drop of acetic acid, and repeat it in a few seconds. By this means all the fibrin and blood-corpuscles will be destroyed and dissolved, and after careful washing away of the acid with distilled water, and final drying, the preparation is ready for use. With a little care in washing, which must not be in a stream, the spirilla are not lost, especially if the preparation has been dried for six to twelve hours before being treated with acetic acid. The glass slide then looks quite transparent, and at the place where the drop of blood was it looks a little dusty. Under the microscope the nuclei and nucleoli of the white blood corpuscles are visible, and between these the spirilla lie in great numbers and in the most distinct arrangement and position, showing up very beautifully and distinctly. They give the impression of being thicker than they generally are, probably because they are no longer imbedded in a highly refracting substance—plasma.

Relapsing fever is liable to be mistaken for one of the forms of continued fever. Its epidemic prevalence will naturally put the physician on his guard. It is, moreover, especially a disease of the lower classes who suffer from insufficient food and filthy surroundings. In most cases it is associated with jaundice, which is a rare complication in typhoid. When the disease rapidly abates, and this cessation is followed by the characteristic relapse, no reasonable doubt as to its nature can be entertained. The main distinctions between relapsing and typhoid may be thrown into a comparative view as follows:

RELAPSING FEVER.	TYPHOID FEVER.
Invasion sudden.	Invasion gradual.
Bowels generally constipated.	Generally diarrhea.
Liver engorged, skin yellow, tenderness over epigastrium.	No yellowness; tenderness over right iliac region.

* St. Petersburg *Med. Wochenschrift*, June, 1878.

RELAPSING FEVER.

Temperature high, 105° – 107° .

Critical sweats with diminution or cessation of the febrile symptoms and relapses.

Spirilla in the blood.

Splenic enlargement.

No characteristic eruption.

TYPHOID FEVER.

Temperature below 104° .

These phenomena absent; symptoms continuous.

No spirilla.

Spleen not materially enlarged.

“Rose spots,” inflammation of Peyer’s glands.

CHAPTER II.

DISEASES OF THE BLOOD.

CONTENTS.—*The Dyscrasiæ. The Arthritic, Dartrous, or Rheumatic Dyscrasia. The Scrofulous or Strumous Dyscrasia. The Syphilitic Dyscrasia. The Tuberculous Dyscrasia. Rhenmatism. Chronic Rhenmatism. Gout. Rheumatic Arthritis. Pernicious Anæmia and Leukemia.*

THE DYSCRASIAÆ.

As is justly remarked by Professor THEODOR BILLROTH, in his *Surgical Pathology*, while it is true that there are some objections to the employment of the term *dyscrasiæ*, as committing one to a humoral pathology, these are overbalanced by the fact that there are certain well-defined, long-recognized, inherited physical peculiarities, which render the person possessing them unusually prone to certain diseases and complications, and which lend a complexion of their own to very many affections seemingly remote in form and pathology.

These constitutional tendencies may as well be known by the term *Dyscrasiæ*, as by any other; and those who deny their existence altogether, as has become fashionable of late years in some quarters, do so in disregard of the high unanimous observations of surgeons and physicians for centuries.

The principal dyscrasiæ are: 1. The *arthritic*, sometimes called dartrous or rheumatic, believed to be pathologically akin to gout and rheumatism; 2. The *strumous*, or scrofulous; 3. The *syphilitic*; and 4. The *tuberculous* or phthisical; the three last mentioned, in the opinion of some, being derived from a common ancestral taint.

THE ARTHRITIC, DARTROUS, OR RHEUMIC
DYSCRASIA.

The following are the signs as stated by Professor HARDY, of Paris: Persons who have this diathesis appear to enjoy good health, but their skin is habitually dry, and their perspiration scanty. They often experience a lively itching without eruption. The appetite is generally well developed, and they are apt to eat a much greater quantity of food (especially animal food) than others in analogous conditions. Another important peculiarity is the extreme sensibility of the skin and the facility with which it is influenced by the lightest and most fugitive impressions. Sometimes general excitement, alcoholic excess, watching, use of coffee, of certain kinds of food; sometimes a local excitement, irritating frictions, or the application of a plaster, will give rise to an eruption, often ephemeral, which reveals a peculiar predisposition of the economy, and the existence of a latent vice which needs but a favorable occasion to manifest itself.

To this diathesis HARDY ascribes eczema, lichen, psoriasis and pityriasis, among diseases of the skin.*

Mr. PRESCOTT HEWETT adds that when a patient complains of dyspepsia more or less troublesome, frequent deposits of lithates in the urine, slight eczematous eruptions on the skin from time to time, anomalous wandering pains in various muscles, sharp, deep-seated pains in the tongue, continuing for two or three days, and then disappearing altogether for a while, crackling about the cervical spine on slight movements, some, it may be, very slight, knottiness about the smaller joints of the fingers—we may be very certain that he has the arthritic diathesis.

Sir JAMES PAGET adds to the above: Small nodules in the cartilages of the ears (*tophi*); nodular enlargement of the knuckles; thickening of the cutis, with subcutaneous bursæ over the knuckles, chiefly between the first and second phalanges of the fingers; thickening of the palmar fascia, adhering to the cutis, and producing contraction of the fingers; spontaneous pain in the tendo-Achillis; pain in the heel;

* *Maladies de la Peau*, Paris, 1860.

frequent and persistent erections at night not connected with any sexual feelings; "burning soles" and "burning palms;" sensations of hot, tingling and burning patches of the skin of the thighs, without external appearances of redness or eruption; patches of "dry eczema."

In such patients, an injury may be followed by a well-marked attack of gout; or the trouble may linger, with pain and occasional swelling, and with constantly increasing distrust of surgery and the surgeon, till some one suspects the existing taint of the arthritic diathesis, and acting on the suspicion, addresses his remedies to it, and promptly cures the local trouble.

THE SCROFULOUS OR STRUMOUS DYSCRASIA.

This form of blood poisoning has been aptly termed by Mr. JONATHAN HUTCHINSON, "the basis-diathesis on which both gout and rheumatic arthritis are built, and which to a large extent is indifferent and common to both." When a man with such a diathesis becomes affected with a renal disease, gout develops itself; otherwise he will probably have rheumatism. In many families it is observed that the males have gout, the females rheumatism. The explanation is not far to seek.* In another lecture Mr. Hutchinson describes gout as "chronic rheumatism *plus* a diatetic derangement."

Many skin diseases, nervous affections so-called, "cramp colic," headaches, sciatica, vertigos, palpitation, and obstinate dyspepsia are really latent gout. In such cases there is usually a history of antecedent or hereditary rheumatic diathesis, frequent acid eructations, the emission of pale, limpid, acid urine, of low specific gravity, and with traces of sugar or albumen or both; some varicosity of the veins; the nails are brittle; and there is slight redness around the eye indicative of mild chronic conjunctivitis (Dr. J. RUSSELL REYNOLDS).

Sir JAMES PAGET defines the principal signs of scrofulous constitution to be slowly progressive and long abiding inflammations, provoked by less causes than would excite inflammation in healthy persons, the inflammatory process tending to the production of

* *Medical Times and Gazette*, June, 1876.

“cheesy” matter; permanent incisors, with their borders barred, crenated, thin and brittle; the mucous membrane of the lower turbinated bone swollen, puffed and congested; a long abiding ozæna in early life, with frequent or daily discharge of scabs; general swelling, with glandular enlargement of the whole naso-palatine mucous membrane; a granular pharynx, with its lining membrane more or less thickly scattered with prominent glands; the perforating ulcer of the nasal septum—these are some of the minor signs. Still more positive are enlarged and suppurating lymph glands discharging curdy pus, and slowly healing with red-banded and barred scars; pustules by the edge of the cornea; frequent impetigo with swollen glands; periosteal swellings of the phalanges; chronic thickenings of synovial membranes; obstinate otorrhea. If a patient is found to have or to have had any few of these, he may justly be pronounced scrofulous, and scrofula may be suspected in any localized morbid process in him. Or, if these diseases are known to have occurred singly or together in many members of a family, we should look out for scrofula as an element of whatever disease may appear in any member of that family.

Dr. FRANCIS DELAFIELD, of New York city, observes* that practitioners in this country see comparatively so little of scrofula that it is difficult for them to appreciate the prominent place it holds in the minds of physicians in European countries. It is a condition which is hardly susceptible of a definition, and yet it is not hard to understand what is meant by the term.

It means this: When an individual acquires an inflammation of a mucous membrane, of the skin, of the joints, of the bones, of the genito-urinary apparatus, or of almost any part of the body, such an inflammation usually runs an acute course and terminates in resolution, or in suppuration, or in the formation of organized new tissue. But, if the inflammation, instead of doing this, simply reaches a certain point and stays there, and then, instead of resolving or suppurating merely, goes through a succession of degenerative changes, such an inflammation is said to be scrofulous.

The scrofulous inflammations have several well-marked character-

**N. Y. Medical Record*, Vol. x, p. 338.

istics. They are very slow in their progress; they are very rebellious to treatment; they are accompanied by an extensive cellular infiltration of the inflamed parts, so that when the degenerative changes ensue there is large destruction of tissue. The degeneration which occurs in the products of such a scrofulous inflammation is peculiar in its nature; it is commonly called cheesy degeneration, and consists in the transformation of the products of inflammation into a dry, yellow mass, composed of amorphous granular matter. Examples of this form of inflammation will at once suggest themselves. Caries of the vertebra, hip-joint disease, white swelling of the knee-joint, scrofulous orchitis, and enlarged lymphatic glands, are all of frequent occurrence.

THE SYPHILITIC DYSCRASIA.

Apart from the special recognition of constitutional syphilis, it is of the utmost importance for the physician to be on the alert to recognize and meet the syphilitic dyscrasia as it exists, (1) in the infantile period of life by inheritance, and (2) in advanced years, in the condition of *latency*.

Mr. JONATHAN HUTCHINSON, F. R. C. S., states that in the infantile period we recognize syphilis by the peculiarity of certain single symptoms, or else, by the peculiar grouping of several different symptoms.

The *rash* on the skin is one of the commonest evidences. It is usually erythematous or papular, of a peculiar red or coppery tint, in abruptly-margined patches. Pustular, vesicular, and bulbous rashes and condylomata about the anal orifice are also frequent.

The *snuffles*, a peculiar, obstinate coryza, is almost always present.

Iritis and a tendency to deep-seated inflammations of the eye are often met with.

At or about the age of one year, if the child survives, these symptoms usually all disappear, and the disease enters upon its stage of *latency*.

To detect its presence in the system at this period, we must first look to the evidences of past disease.

A sunken bridge of nose, caused by the long continued swelling

of the nasal mucous membrane when the bones were soft; a skin marked by little pits and linear scars, especially near the angles of the mouth; the relics of an ulcerating eruption in early life; a protuberant forehead consequent upon infantile arachnitis; clouds in the cornea from past iritis—are all signs pointing to the constitutional taint.

The *teeth* furnish valuable aid. The upper central incisors are narrow and short, and notched in the centre in a half-moon shape, a shallow furrow running from this notch to the gum; the canines are narrow, rounded and peg-like; there are usually interspaces between the teeth. This may be considered an almost absolute sign of the taint.

The general growth is not often retarded, but the *complexion* is an important indication. It is exceedingly rare to meet a florid, good complexion in a young adult who is the subject of this taint. It is almost always pale.

Such persons, seemingly in full youth and vigor, generally have little spontaneous physical energy; they do not seek athletic exercise nor the trials of strength; and are languid in motion.

Other signs which may be mentioned are: a patch upon the choroid, an optic irregular neuritis; a faint interstitial keratitis; an unequal thickening of the vocal cords, with cicatrices of old ulceration; and last, but not least—and especially where syphilis is associated in a gouty habit of body—psoriasis upon the sides of the tongue, as well as an indurated irregular thickening of the lower bowel.

THE TUBERCULAR DYSCRASIA.

In many instances tubercular disease is brought about by the strumous dyscrasia, and is by many identified with it. The physical characteristics of scrofulous subjects belong also to the majority of consumptives in a greater or less degree. Others are pre-disposed to the disease, through defective oxygenation caused by unfavorable form of the thoracic walls. But the researches on this subject are still incomplete, and it is well to bear in mind the words of Dr. A. T. H. WATERS:

“There is no temperament which does not furnish victims to con-

sumption; nor can we say that there is any conformation of the body which is characteristic of the phthisical. I have seen men and women with the best developed frames and the most ample chests attacked with phthisis. You must not, therefore, be misled by the existence of these conditions, by the appearance of robustness in your patients, into imagining that they cannot possibly become the subjects of this disease."

RHEUMATISM.

Ordinarily an attack of acute rheumatism is recognized without difficulty by the pains in the joints, their swelling and tenderness, the shifting character of the disorder from joint to joint, and the absence of the symptoms of disturbance of the brain and stomach so common in continued fevers, as well as of the intermissions or remissions of periodic fevers.

Nevertheless it is true, as remarked by Dr. S. O. HABERSHON,* that whilst there are many characteristics of true rheumatic disease, few maladies are more easily mistaken, and there is *no* sign which is *uniformly* present. Pain is, perhaps, the most constant indication, with stiffness of one or other joint; but rheumatic pericarditis may, and often does exist, without any pain whatever. The same may be said in reference to febrile symptoms, to increase of temperature, and to changes in the urine; none of these signs is pathognomonic. Many maladies are designated rheumatic which have no connection with that disease.

1. *Diseases of the spine* are often said to *commence* with an attack of rheumatism; but it will generally be found that the pain in the course of the nerves or in the fibrous tissues arises from direct implication of the nerves or their centres.

2. The same remark applies to pain produced by the pressure of *cancerous*, *aneurismal*, or other tumors. Thus cancerous disease of the lumbar glands is often mistaken for lumbago; so also the pain from aneurismal disease of the thoracic and abdominal aorta, when no pulsating tumor can be detected, is referred to rheumatism.

* *Half-Yearly Compendium of Medical Science.* III.

3. During the course of *renal disease*, abnormal irritation arises not only in the serous membranes, producing pericarditis, pleurisy, peritonitis, etc., but a similar change happens with the synovial membranes, and a form of disease is induced which simulates rheumatism.

4. In chronic poisoning by *lead*, vague pains in the fascia, as well as in the joints, have been designated "saturnine arthralgia."

5. *Periosteal disease* is occasionally a source of fallacy in the diagnosis of rheumatism.

6. *Shingles* or *herpes zoster* may be found in the course both of the cerebral and spinal nerves; and the severe pain which precedes the eruption of the vesicles, and which also follows their disappearance, closely simulates local rheumatism.

7. A more important disease, and one which is attended with fatal issue, is *pyæmia*. It closely resembles rheumatism; for, with rigor and febrile symptoms, there is fixed pain and swelling in the joints—first one, then another, being affected, though without subsidence of those parts first attacked. But whilst there may be some similarity in the symptoms, the prognosis is widely different. The one is generally a curable disease; the other, a fatal one.

8. *Acute synovitis* closely resembles rheumatism, having pain and heat in the joint with distension. But as a rule it affects only one joint; it is never subject to metastasis; and there is little or no effusion into the surrounding tissue. The accumulation of fluid in the joint is greater, but the constitutional symptoms are less prominent.

9. *Milk leg* occurs after fevers, or, in woman, after confinement. The limb swells throughout, becoming white, firm, hot and shining, and pits but little on pressure. The history of the case and appearance of the limb are usually sufficient to form the diagnosis.

CHRONIC RHEUMATISM.

The most common form of chronic rheumatism is that which affects the muscles, and it is frequently by no means easy to distinguish the pains due to the rheumatic diathesis from those of a wholly diverse etiology.

The principal distinctions are

1. From *neuralgia*. Neuralgic pains are usually confined to the distribution of one nerve; they are not increased by motion or pressure; they are not attended with diffused soreness; and they are variable in intensity, and are not attended with acid secretion.

2. From the *pains of organic lesions*. These are usually so clearly localized as to point to their origin. Nevertheless the pain in the right shoulder, symptomatic of hepatic disease, and especially of an abscess approaching the serous surface of the liver, and the sympathetic pain down the left arm in some cases of heart disease, are often carelessly looked over, and their significance unheeded, by classing them as rheumatic. Intercostal rheumatism has included pleurisy, pleurodynia, broken ribs, herpes, neuralgia, the peculiar pain, generally of the left side, found in women, and connected with menorrhagia and leucorrhœa; the pain on either side, which is intimately connected with debility and anæmia; and again is confounded with that condition of pain and soreness of the muscles developed by overwork, and attended with both muscular and cutaneous hyperæsthesia, designated by INMAN "myalgia."

3. From the *osteocopic pains of syphilis*. The history of the case throws some light; but as this often cannot be had, it should be remembered that syphilitic periostitis evinces a decided partiality for the periosteum and shafts of the long bones, and is very generally accompanied by nodes, especially in the anterior surface of the tibia, which are almost pathognomonic. There is often, too, a more marked cachexia than is found along with non-specific rheumatism. The clavicle, humerus, and forearms, are frequent locations of this form of rheumatism. As well as its favorite seats and accompanying nodes, there are evidences of skin and throat affections, a mutilated iris, etc., which will assist in forming a correct diagnosis. Furthermore, the ready response to a specific treatment aids in distinguishing syphilitic pains.

4. From *progressive locomotor ataxy*. Ataxic patients often bitterly complain of supposed rheumatic pains. These pains, in locomotor ataxy, come on in severe pangs—"stabbing, boring, shooting like lightning, flitting from one place to another in a very erratic manner,

and recurring paroxysms lasting from a few minutes to many hours." Their suddenness is their especial characteristic, and should always put the medical observer on his guard to look out for the other indications, as loss of tactile sensibility, etc. These pains may be accompanied by a feeling of coldness, thus closely simulating some forms of rheumatism. The importance of them lies in the prognosis, as the pains of locomotor ataxy are not to be relieved by art.

5. The *pains of chronic renal disease* often closely simulate *lumbago*, or muscular rheumatism of the loins. No absolute distinction can be positively drawn except from examination of the urine; but in some forms of renal disease albumen is often absent for long periods together. The urine varies greatly, however, in quantity, and when great in quantity is usually of low specific gravity, and contains granular casts, which, however, are often few in number and not easily found. An absolute diagnosis is, however, not always attainable. We are then thrown back upon the rational symptoms, and the distinguishing characteristics may be found to run somewhat in the following directions: Rheumatism is associated with the fibro-serous texture; in lithiasis the poison has more affinity for the true serous surfaces, and is often the cause of pleurisy and peritonitis. Lithiasis more affects the muscles, and rheumatism rather the large joints. Diarrhoea, vomiting, and other affections of the mucous membranes, as bronchitis, accompany lithiasis; and in these it differs from rheumatism. Lithiasis is accompanied by headache, especially of the vertex (persistent and recurring vertical headache is almost pathognomonic of lithiasis), or the pain may be frontal. (FOTHERGILL.)

A typical effect of the acid diathesis of chronic rheumatism is the *Rheumatic markings of the teeth*, to which attention has been directed by Dr. L. G. NOEL.*

These markings seldom appear until after middle life is past. They are most frequent upon the crowns of the teeth, though they are sometimes seen upon their buccal and labial surfaces. It is that condition of the teeth, treated of in dental works as "spontaneous abrasion."

**Nashville Journal of Medicine and Surgery*, Feb., 1875.

The abrasion often begins as decay in the fissures on the grinding surface of the molars and bicuspid, but instead of following the tubuli, and dipping deep into the interior of the teeth, these become closed by a calcareous deposit, as fast as laid open, and the decay spreads out into a wide saucer-shape. This cupping out of the teeth is not, however, confined to the molars and bicuspid, but commencing upon the cusps of the canines, and cutting edges of the incisors, as mere mechanical abrasion, asperities disappear, the teeth become square and polished on end, and presently the surfaces begin to assume a concave, instead of their original convex, appearance. This cupping out may go on until the pulp is so nearly reached as to become irritated, to the point of inflammation and death ; but usually its irritation is only sufficient to cause a deposition of secondary dentine on the interior of its chamber, a part of its substance forming a matrix in which lime-salts are deposited.

GOUT.

The signs of gout have already been in part referred to (page 59). It is not nearly so frequent in the United States as in England, and is apt therefore to be mistaken for rheumatism, which it closely resembles. The following table of differences will facilitate the diagnosis :

GOUT.	RHEUMATISM.
Generally a hereditary history.	Rarely hereditary.
Occurs usually in males, beyond middle age.	Occurs oftener in females, and before middle age.
Attacks generally periodic, and last about a week.	Attacks dependent on exposure, and last several weeks.
The small joints chiefly affected, especially that of the great toe, or lower extremity.	The large joints are those generally attacked.
Much local pain, redness, œdema, and enlargement of veins.	All these symptoms less marked.

GOUT.

Kidneys generally affected; little fever; no sweating; heart not implicated.

Chalk stones in the joints.

Uric acid always present in the blood in large excess (GARROD).

RHEUMATISM.

Kidneys not involved; fever often high; sweating profuse; heart often implicated.

Chalk stones never present.

Uric acid never found in excess.

Dr. GARROD says that the presence of uric acid in the blood can readily be demonstrated by taking a fluidrachm of the serum from a blister, adding to it six minims of acetic acid, and placing a thread in the mixture. The uric acid, if present, will be deposited in fine crystals along the thread.

RHEUMATIC ARTHRITIS (RHEUMATIC GOUT, ARTHRITIS RHEUMATICA DEFORMANS).

This is by no means an infrequent disease in this country, and is a very serious one. It is now acknowledged by the best authorities to be a distinct malady, different in origin, history and treatment from both rheumatism and gout. It is common in women and young persons, and is not produced by alcoholic or other excesses. It implicates joints of all size, and in all the extremities. They become permanently affected, stiffened and enlarged, but no deposits of urate of soda are found in them. The disease frequently shows itself without fever; the joints swell by serous effusions into the capsules, and along with this the ends of the bones enlarge. The integument is not inflamed or but moderately so, and the muscles do not appear to suffer. The result on the joint may be subluxation, relaxation, or ankylosis. The concretions attendant on the disease prove on analysis to be of the same composition as bone, with a slight preponderance of lime (DRACHMANN). Phosphoric acid is diminished in the urine and increased in the blood (BÖCHER).

Neither the treatment of gout nor that for acute rheumatism yields its usual results in this disease.

PERNICIOUS ANÆMIA AND LEUKEMIA.

The positive diagnosis of these conditions can only be secured by a microscopic examination of the blood.

In pernicious anæmia, according to Dr. EICHHORST, the characteristic appearances are: A portion of the red corpuscles are seen to retain their normal size, but are marked by an extreme paleness, with a tendency to crenation and the formation of rouleaux, while others among them attract attention by their small size, which is reduced often to one-fourth the diameter of the well formed corpuscles. These small ones are more deeply colored, and if allowed to roll over under the thin cover-glass, their appearance in profile shows them to have lost to a greater or less extent their tri-concave outline.

For the examination of the blood in such investigations, Dr. GOWERS, of London, recommends the use of the *hæmacytometer*, by which he measures for the purpose of ascertaining the number of red and white cells in a given volume of blood. The essential part of the apparatus consists of a glass slip, on which is a cell one-fifth of a *millimètre* (.0008 inch) deep. The bottom of this cell is divided into one-tenth *millimètre* squares. Upon the top of the cell rests the glass cover, which is kept in its place by the pressure of two springs. In estimating the number of corpuscles, the patient's finger is pricked; then by means of a capillary pipette, five cubic *millimètres* of blood are taken up and well mixed up with 995 cubic *millimètres* of saline solution; a drop of the dilution is then placed in the glass cell, the cover is adjusted, and the slide is placed in the field of a microscope. In a few minutes, all the corpuscles have sunk to the bottom of the cell, and are seen lying on the squares; the number of corpuscles in ten squares is then counted, and this, multiplied by 10,000, gives the number in a cubic *millimètre* of blood. The degree of dilution and size of the squares are so proportioned that, with normal blood, two squares contain about 100 corpuscles, and the number in two squares thus expresses the percentage proportion of corpuscles to that of health. The proportion of white corpuscles to red or their absolute number, may be easily determined during the same observation.

A simpler method is used by Dr. J. G. RICHARDSON, of Philadel-

phia. He spreads a drop of fresh blood thinly on a glass slide, letting it dry, and then counting the number of white corpuscles. The specimens when thus prepared can be kept dry for any length of time, if preserved from dust and moisture, and by comparing specimens of different persons' blood, prepared similarly, the variations in the number of white corpuscles can be readily observed. By this means he claims to detect leukemia in its early stages.

Profound anæmia is met with in the following conditions: (1) After great loss of blood or exhausting discharges; (2) where there is insufficient nourishment; (3) in chlorosis; (4) in cases of malignant disease; (5) in Bright's and Addison's disease, leucocythemia, and chronic poisoning.

The symptoms of the idiopathic or "progressive pernicious" form of anæmia is described by Dr. BYRON BRAMWELL as follows;—A profound anæmia, which is associated with marked changes in the microscopical characters of the blood, and (in most cases) with the presence of retinal hemorrhages. The patient is generally well covered with fat, the skin is smooth and soft, the face looks slightly swollen, and is of a pale yellow or yellowish-green color. All the symptoms of profound anæmia are present, viz., extreme pallor of the mucous membrane, great debility, tendency to fainting, dyspnœa and palpitation on exertion, buzzing in the ears, headache, subcutaneous œdema, etc.; loud blowing murmurs are heard over the heart and great vessels; there is a venous hum in the neck; the pulse is very soft and compressible. Attacks of vomiting and diarrhœa are frequent; irregular elevations in temperature, transient paralyses, hæmorrhages from the mucous membranes occasionally occur. The causes of the disease are at present unknown. The disease is said to occur more frequently in women than in men. In the majority of cases the termination is in death, the end being ushered in by profuse diarrhœa, coma, or delirium.

PART II.

LOCAL DISEASES.

CHAPTER I.

DISEASES OF THE NERVOUS SYSTEM.

CONTENTS.—CEREBRAL DISEASES—*Cerebral Congestion and Cerebral Hyperæmia. Cerebral Hemorrhage, Cerebral Thrombosis and Cerebral Embolism compared.*

DISEASES OF THE CORD—*Cerebro-Spinal Diseases. Comparative Table of Locomotor Ataxia, Multilocular Sclerosis, Disseminated Syphilosis and General Paralysis. The Location of Cerebro-Spinal Lesions. The Forms of Paralysis; Organic, Functional, Hysterical; with and without tremors; Sclerosis of the Cord; Antero-lateral and Posterior Sclerosis. Paralysis Agitans. Reflex Paraplegia and Paraplegia from Myelitis. General Paralysis of the Insane. Syphilitic General Paralysis. Pseudo-hypertrophic Paralysis. Paralysis from Lead Poisoning.*

NEURALGIA—*Comparison with Myalgia; with Spinal Irritation; with Cerebral Abscess. Spinal Irritation. Hysteria. Epilepsy. Hysterical Paralysis. Insanity; Mania and Melancholia compared.*

CEREBRAL CONGESTION AND CEREBRAL ANÆMIA.

These two conditions are in their early and minor stages exceedingly similar in symptoms. The following table, prepared by HAMILTON,* will furnish sufficient limits to distinguish most cases :

* *Nervous Diseases*, p. 79.

CEREBRAL CONGESTION.

Headache (generally diffused).

Noises in the ears (generally "rumbling" or singing).

Mental disturbance—loss of memory, hallucinations.

Pupils contracted.

No heart sounds, except perhaps those of insufficiency. Pulse full.

Urine not increased, generally contains urates and phosphates.

CEREBRAL ANÆMIA.

Headache (chiefly vertical).

Noises in the ears (generally short or sharp).

Mental disturbance—incapacity for mental work.

Pupils dilated.

Pulse irritable. Aortic murmurs, sphygmographic tracing almost straight.

Urine passed in large quantities; is clear and limpid.

APOPLEXY.

Apoplexy is to be distinguished from drunkenness, narcotic poisoning, uræmic poisoning, epilepsy, concussion of the brain, cerebral thrombosis and embolism.

Drunkenness. The odor of liquor may excite suspicion. If the patient vomits, the ejecta may be tested for alcohol. Or the urine may be tested by Anstie's test, as follows :

R.	Bichromate of potash,	1 part	
	Strong sulphuric acid,	300 parts.	Mix.

To fifteen minims of this, add a few drops of the urine, and if the patient has taken a toxic dose of alcohol, the mixture will turn an emerald green. In drunkenness the pulse is generally rapid, the pupils dilated, the eye injected. The patient can be roused and hiccoughs.

Narcotic poisoning. In this condition the outset is gradual, there are often convulsions and the patient may be roused. In opium poisoning the pupil is contracted; but it is also so in hemorrhage in the frons. The vomiting, the acrid odor of opium and the gradual intensification of the coma are diagnostic.

Uræmic poisoning. Here the coma nearly always comes on gradually and is preceded by convulsions. It is not deep and the patient may be aroused. The stertor of the breathing is more superficial.

MR. W. WHITTLE remarks that in such cases great assistance will be had from careful examination of the condition of the heart, as nearly always distinctive modifications of the heart sounds will be heard, as reduplication of one or both, intensity of second sound, etc.; differences also in the arterial tension and cardiac impulse. Of these none seem so constant or remarkable as muffling of the first sound.

There are, moreover, marked prodromata. The skin is waxy and œdematous, the eyelids are puffed and the legs and feet swollen. The urine is albuminous (but this may also be present in apoplexy).

Epileptic coma presents a history of convulsions; lasts but for an hour or two; there is frothing at the mouth; and the temperature is elevated.

In *concussion or compression* from injuries to the head the skin is pale, the pupil dilated, and vomiting occurs. The symptoms are usually of short duration and there is a history of injury.

Syncope is readily distinguished by the feeble pulse, the pale face, the quiet respiration and the brief duration of the unconsciousness: while in *asphyxia* the livid face, distressed breathing and blue lip which precede the coma indicate its distinction.

In regard to *thrombosis* and *embolism* of the larger cerebral vessels the diagnosis is often extremely difficult. The following table of the comparative symptoms is drawn up from the works of BAUDUY, GELPKE, FLINT and HAMILTON.

CEREBRAL HEMOR- RHAGE.	CEREBRAL THROM- BOSIS.	CEREBRAL EMBOL- ISM.
Occurs in advanced age, with antheromatous arteries.	In advanced age.	Almost always in early or middle life. (FLINT.)
Onset generally sudden.	Development of symptoms gradual.	Prodromata absent.
Hypertrophy of left ven- tricle. Alcoholism or other debilitating habits.	No rheumatic history. Endo-arteritis deformans of peripheral arteries some- times present.	Previous articular rheuma- tism or other disease lead- ing to formation of clots. Cardiac valvular insuffi- ciency. Coincident embol- isms are sometimes present.
Hemiplegia indifferently on either side.		Hemiplegia generally on the right side.
Aphasia ataxic, secondary to a loss of consciousness. Intelligence much involved.	Aphasia incomplete and primary occasionally absent. Intelligence less involved. Rarely loss of consciousness.	Aphasia amnesic. Reten- tion of early mental power.

CEREBRAL HEMOR- RHAGE.	CEREBRAL THROM- BOSIS.	CEREBRAL EMBOL- ISM.
Paralysis very marked; occurs on either side.	Paralysis less marked.	Muscular paralysis exten- sive; nearly always on the <i>right</i> side (FLINT).
Apoplectic phenomena from the outset. Symptoms of cerebral pressure.	Apoplectic phenomena during the last stage.	Early apoplectic pheno- mena.
Disappearance of the res- idual disorder after a mod- erate time.	Recovery slow; lasting hemiplegia may remain.	Very rapid, or else quite imperceptible disappearance of the residual disorder.
After a few days pain in the head and increased tem- perature of the body on the <i>unaffected</i> side (FLINT).	Not marked.	Not marked.

DISEASES OF THE CORD.

In distinguishing the various forms of *disseminated* or *multilocular* cerebro-spinal affections, the following table given by Professor CHARCOT will render valuable assistance. The symptoms of great-
est importance are set up in *italics*.

CEREBRO-SPINAL AFFECTIONS.

LOCOMOTOR ATAXIA.		MULTILOCULAR SCLEROSIS.	DISSEMINATED SYPHILOSIS.	GENERAL PARALYSIS.
CEPHALIC SYMPTOMS.	Epileptiform Apoplectic Attacks.....	<i>Epileptiform Apoplectic Attacks</i>	Epileptiform Attacks.	Epileptiform Apoplectic Attacks.
	.....	.....	Par.H'mipl'gic Epil'y	.....
	Vertigo	<i>Vertigo</i>	<i>Vertigo</i>	<i>Vertigo</i> .
	<i>Diplopia, Strabismus</i>	<i>Diplopia</i>	<i>Amblyopia, Optic Neuritis.</i>	Diplopia.
	.....	<i>Nystagmus</i> .....	.....	Amblyopia.
	<i>Amaurosis</i>	Amblyopia, White Atro- phy	<i>Diplopia</i>	<i>Inequality of Pupils.</i>
	<i>Inequality of Pupils</i>....	.....	.....	.....
	<i>Facial Anaesthesia</i>.....	.....	<i>Headache, Fixed Pain</i>	Headache.
	<i>Deafness</i> .....	.....	.....	.....
	<i>Meniere's Vertigo</i>.	.....	.....	.....
	Laryngismus	<i>Embarrassm't of Speech</i>.	.....	<i>Embarrassm't of Speech.</i>
	Embarrassm't of Speech.	<i>Difficult Deglutition</i>....	.....	.....
	.....	Pneumogastric Palsy.....	Total Facial Palsy....	.....

	LOCOMOTOR ATAXIA.	MULTILOCULAR SCLEROSIS.	DISSEMINATED SYPHILOSIS.	GENERAL PARALYSIS.
VISCERAL SYMPTOMS.	<i>Gastric Crises</i>	<i>Gastric Crises</i>	Non-nervous Crises...	
	<i>Nephritic Crises</i>			
	<i>Vesical Crises</i>			
	<i>Paresis of Bladder</i>			Paresis of Bladder.
	<i>Cystitis</i>			
SPINAL SYMPTOMS.	<i>Girdlepain</i>	Lightning Pains.	<i>Pseudoneural Pains</i> ...	<i>Lightning Pains</i> .
	Hyperæsthesia, Anæsthesia ..	<i>Plaques</i>	<i>Spin'l Hemianæsth's</i> .	<i>Tingling</i> .
	<i>Inco-ordinated Movem't.</i>	Incoördination.....		<i>Inco-ordination</i> .
	Contractures and Trepidations	<i>Special Trembling</i>	<i>Spasmodic Paraplegia under form of Hemiparaplegia</i>	<i>Paresis. Trepidation</i> .
		Spasmodic Paraplegia....		<i>Special Trembling of Hand</i> .
TROPIC SYMPTOMS.	Eschars	Eschars		Eschars.
	Arthropathies.....	Arthropathies.....		
	Fractures			
	Muscular Atrophy.....	Muscular Atrophy.....		Muscular Atrophy.

In applying these symptoms in practice, we should, of course, give first attention to those which are most characteristic. Thus, if we observe, in a patient, ataxy with nystagmus, we must think of multilocular sclerosis and not of locomotor ataxy (tabetic series), because nystagmus is a valuable symptom of multilocular sclerosis. In the same way spasmodic paraplegia (recognized by the continual trembling movements which are produced when a single blow is struck upon the soles of the feet) is much more characteristic of syphilosis than of multilocular sclerosis, especially if accompanied by *fixed pain*, which always indicates a phenomenon of compression. Ex.: paraplegia consecutive to Pott's disease.

In regard to the symptoms of syphilitic nerve disease, Dr. BUZZARD, of London, points out in a recent monograph that though there may be no pathognomonic symptom of the specific origin of a nerve disorder, yet the peculiar grouping of the symptoms "may lead of itself to a probability but little short of certainty."

The following three points are especially noteworthy :

1. The age of the patient. In young adults, free from heart disease and disease of the kidneys, syphilis should be suspected as the cause of nerve disorder much sooner than in patients of older age, whether older in years or only old in constitution. In connection with this point, Dr. BUZZARD says : "I have little hesitation in stating my conviction that, putting aside cases of injury, hemiplegia or paraplegia occurring in a person between twenty and forty-five years of age, which is not associated with Bright's disease, nor due to embolism (from disease of the cardiac valves), is, in at least nineteen cases out of twenty, the result of syphilis."

2. "The existence simultaneously of two or more grave lesions of the nervous system, not necessarily connected," is a condition of great significance ; "it is exceedingly uncommon except as a result of syphilis, and very common in the disorders of the nervous system which are consequent on that disease."

3. "The existence of marked cachexia unexplained by evident disease of any of the viscera." These are sign-posts specially pointing to the existence of syphilitic infection.

THE LOCATION OF CEREBRO-SPINAL LESIONS.

Much attention has been devoted by neurologists to locate the lesions which correspond to the symptoms of the various cerebro-spinal diseases. From the studies of BROWN-SÉQUARD, BROCA, CHARCOT, GUBLER, SEGUIN and others, we may lay down the following general schemes :

THE BRAIN.

Lesions of the Right Hemisphere.

Anæsthesia more complete.

Paralysis more complete.

Paralysis of sphincters.

Alterations of nutrition (edema, echars, fevers, pulmonary congestion).

Disorders of special senses.

Hysterical symptoms.

Lesions of the Left Hemisphere.

Loss of speech (aphasia).

Paralysis of muscles of articulation.

Hysteria seldom.

THE SPINAL CORD.

Transverse diffused myelitis (acute and chronic).	{ occupying the entire section of a limited portion of the cord, more or less completely.		
Disseminated sclerosis (<i>scîérose en plaques</i>).	{ Patches of disease situated primarily in the connective tissue, and scattered without regard to the "systematic" grouping of the nervous elements.		
"Systematic" myelitis, mainly affecting the white columns.	Sclerosis of the posterior columns (locomotor ataxy).	{ Its distribution is "systematic," and, <i>probably</i> , it is primarily a primary disease of the nerve elements rather than of the connective tissue.	
	Symmetrical lateral sclerosis.			{ Ditto, though its pathology is as yet almost purely a matter of inference. Its characteristic symptom is muscular rigidity.
Myelitis of the gray matter of the anterior cornua.	{ Polomyelitis anterior.	{ Acute. { Infantile paralysis. Acute spinal paralysis of the adult. Subacute. Chronic.	{ Often classified as a special form of poliomyelitis chronica, but characterized by the absence of paralysis, except such as is directly due to the muscular atrophy.
Amyotrophic lateral sclerosis.	{ Progressive muscular atrophy and progressive bulbar paralysis ("labio-glosso-pharyngeal paralysis").	{	{
{ Not yet thoroughly studied, but believed by CHARCOT and others to involve at once the lateral columns and the anterior cornua; the characteristic symptoms being atrophy with contracture, beginning in the upper extremities.			

THE FORMS OF PARALYSIS.

A leading symptom of many diseases of the spinal cord, whether functional or organic, is *paraplegia*. It is very rarely of cerebral origin, and may then be distinguished by the co-existence of distinct evidences of brain disease, as headache, impaired cerebration, and paralysis of parts supplied by nerves arising above the spinal cord.

The following classification of diseases giving rise to paraplegia, with their characters, has been proposed by Dr. H. C. WOOD, Jr.*

ORGANIC.	FUNCTIONAL.	HYSTERICAL.
	Anæmic.	Hysteria.
Disease of the cord.	Reflex (from peripheral irritation, renal, præputial, etc.)	
	Dyscrasic (diphtheritic, etc.)	

The last mentioned, hysterical, is also functional, but simulates the organic more closely than does the second group. (For Hysterical Paralysis, see under Hysteria.)

*On the Diagnosis of Diseases accompanied by Paraplegia. 1875.

The general distinctions between the organic and functional paralysias may be presented as follows :

<i>Organic.</i>	<i>Functional.</i>
Onset may be almost instantaneous or very rapid, though often also gradual.	The onset always more or less gradual, except the hysterical form, where the paralysis is generally abrupt.
Usually at some period spasm or pain in the affected limbs.	Spasms or pain rarely or never present.
Often a sensation of a band or stricture around the waist, <i>girdlepain</i> (pathognomonic).	Not found.
Anæsthesia frequent and often complete.	Anæsthesia absent or but partial.
Retardation of sensation (a perceptible time elapses between the patient's seeing his feet touched and feeling that they are), (pathognomonic).	Sensation, if felt at all, is not retarded.
• Symptoms of paralysis of the bladder.	No symptoms whatever of vesical paralysis, except in the hysterical form.

Where the bony canal is involved and caries is present, this condition may generally be discovered by ROSENTHAL'S test. This consists in passing down the back a pair of electrodes attached to a faradaic battery of some power, one pole being placed upon each side of the spine. Under these circumstances if there be any caries or inflammation of the vertebræ, the moment its locality is reached the patient starts or screams from the burning sticking pain caused by the passage of the galvanic current through the inflamed tissue. Dr. WOOD states he has not found this test as trustworthy as its originator claimed it to be, and as, apparently, it ought to be. In cases simulating caries, however, the pain is probably not so severe as where the vertebræ are really affected. Moreover, absence of the pain in any case seems to be conclusive evidence of the non-existence of bone-disease.

The diseases of the spinal marrow are classified by Dr. WOOD according to the *rapidity of their onset*, as follows, the attack being considered rapid when decided paralysis has developed within forty-eight hours:

Rapid onset.

Congestion.
Meningeal apoplexy.
Spinal apoplexy.
Acute myelitis.

Slow onset.

Sexual exhaustion.
White softening.
Chronic myelitis.
Tumors.

In congestion of the cord the diagnosis rests upon: Suddenness of onset; uniform, bilateral loss of voluntary motion, reflex activity and sensation; absence of all symptoms of irritation, such as spasms or violent pains; absence of constitutional disturbance. It must also be remembered, that the palsy affects first and most severely the lower limbs, but may rise to the arms, and, finally, to the muscles of respiration, and thus prove fatal; that so far as the paralysis extends, all the muscles are involved; that motion is affected more than sensation; and that very rarely, if ever, does ulceration or other indications of trophic changes occur.

In *meningeal apoplexy* the symptoms are also due to pressure, but the effused blood not only disturbs the cord by pressing upon it, but also irritates the membranes and the nerve-roots, especially when first thrown out. Consequently, in the first few hours or days of a meningeal hemorrhage, there are violent spasms and pains, due either to an incipient meningitis, or more probably to a direct irritation of the nerve-roots. The extent and amount of the symptoms vary, of course, with the position and amount of the hemorrhage. Later there are symptoms of pressure varying in intensity with the amount of the effusion; and absence of febrile symptoms, unless decided meningitis be produced by the clot.

In *spinal apoplexy* the symptoms come on with absolute abruptness. The cord is so small a body that a clot in its substance interrupts at once its function. The paralyses of motion and sensation are complete, and reflex movements are greatly exaggerated. As there is no correlation of the spinal nerve-roots, the spasms and pains of meningeal hemorrhage are wanting.

Acute primary myelitis is a very rare affection. The diagnosis should present no difficulty. The distinct febrile reaction, which is stated to be always present, separates it at once from all other acute affections of the cord proper, so that it can be confounded only with acute meningitis. Probably, in the majority of cases, it exists coincidentally with the last disorder; but even when it is isolated, the symptoms at first closely simulate those of meningitis.

In the slow, or chronic, forms of spinal disease, *spinal tumors* may be considered first. There are three classes of phenomena to be looked for in this disease: local symptoms of diseased structures; atrocious pains at a distance from the seat of the disease, due to the involvement of nerve-roots and nerves, where they pass through the inflamed tissues; and paralytic symptoms, the results of pressure, and to some extent of a local myelitis. In cases of suspected tumors of the spine, all these symptoms are to be looked for. In cancer, they are often all present, and the distant pains are especially remarkable for their atrocity. The symptoms of pressure are, of course, paralysis of motion and sensation gradually deepening.

The other chronic spinal diseases may be classified with reference to the characteristic of *tremors*, as follows:

<i>Without tremors.</i>	<i>With tremors.</i>
Sexual exhaustion.	Paralysis agitans.
White softening.	Multiple sclerosis.
Chronic myelitis. { softening. sclerotic.	
Local myelitis.	

The difference between *sexual exhaustion* and *myelitis* is, probably, one of degree only; but the former is curable; the latter is not.

White softening is very rare. If it can be distinguished clinically from myelitis, it must be by the complete absence, even in the beginning, of pain, and of spasm, and of heightened reflex activity, and the steady deterioration of the power of motion and of sensation, and of the other less distinct functions of the spinal marrow.

Chronic myelitis, with softening, is without, or almost so, the spasms, pains and heightened reflex movements, so common in the important form attended with

SCLEROSIS OF THE CORD.

This degeneration has been divided by writers into a number of clinical forms, of which the most important are (1) sclerosis of the antero-lateral columns, or sclerosis in patches (multi-focal sclerosis); and (2) sclerosis of the posterior columns (locomotor ataxy, tabes dorsalis).

In *sclerosis of the antero-lateral columns* the attack usually begins insidiously; at first there is a loss of power or a trembling, or both, scarcely enough to attract the patient's attention. Generally one side is affected first, but soon the same is seen on the other side. There is usually no pain, no loss of sensation, no perverted sensation. Generally at this stage there are no other symptoms than the weakness and trembling, unless there may be slight cerebral symptoms, as dizziness, a sense of fullness or pressure, faintness, rarely headache. The trembling is peculiar; when perfect rest can be attained it ceases; but soon as an attempt is made to use a muscle the trembling begins again. An effort to carry a tumbler or a spoon to the mouth excites the trembling; as soon as the object is laid aside, and the hand is placed quietly on the knees, there is rest again. The head requires for its support in the sitting posture the action of the muscles of the neck; hence when affected there is a constant oscillation of the head, unless the patient lies down.

As the disease progresses the agitation may become excessive, as in some cases which have been reported wherein the agitation was so severe and violent as to shake the whole system with severe shocks when the least exertion was made, so that it was almost impossible to find a position, even lying down, in which there would not be more or less agitation.

The weakness increases, and is one reason why the patient is unable to go about so much as formerly; walking soon tires him. The weakness may become so great as to be almost equal to a paralysis, only the least motion being possible; and when combined with contraction, walking is out of the question.

In *sclerosis of the posterior columns* the invasion is sometimes insidious; but generally the affection attracts the patient's attention very

forcibly by the pain in the legs, which is frequently of a very severe type. This pain may be the only prominent symptom for years; then may follow numbness, and at length the patient may learn accidentally that he must use his eyes when walking, or he staggers. The pain is of a boring, throbbing, shooting character, suddenly darting through the leg or foot; the patient's expressions show that the torture caused thereby is extreme.

The motor disturbances are characteristic. The patient is unable to walk or even to stand with his feet together with his eyes shut. In walking, the feet are raised with a jerk, higher than is necessary, are thrown forward or sideways in a disorderly way, and brought with the heels first forcibly to the ground. The attack is sometimes attended with a very violent form of gastralgia, or cardialgia, prone to recur at regular intervals.

There are a number of distinctive differences between the symptoms of these two affections. One usually begins in the arms; the other in the legs; one is without pain; the other is accompanied with severe pain; in one there is trembling, muscular weakness, no incoördination; in the other the reverse is noticed; in one slight or even severe cerebral symptoms occur; in the other, with one exception, they are wanting.

But sclerosis may not be confined strictly to the antero-lateral columns; the posterior columns also may become diseased, and then we may have a complicated case, in which will be found the symptoms of both classes of cases. It is rare, however, for posterior sclerosis to spread to the lateral columns, and even when it does thus spread, it is only to a limited degree, and not to an extent sufficient to give rise to the symptoms of antero-lateral sclerosis.

It may further be noted that, in *chronic myelitis* with softening, the paralysis is very marked, and the implication of the bladder and sphincter ani causes the patient to void his urine and feces involuntarily, which is not the case in locomotor ataxia. There is also absence of power in the legs, and none of the pain of ataxia. Ocular trouble and incoördination are likewise absent. In the gait of ataxia, the legs are thrown out with some degree of violence, and the heels come down forcibly; in the paraplegia of myelitis the legs are dragged

after each other, the inner sole scraping the ground. The steady pain in the back of myelitis is absent in ataxia (HAMILTON).

For the *diagnosis* of posterior sclerosis, WESTPHAL has noted a symptom which may be thus described: If a healthy man sits with one knee-joint resting upon the other (a very common attitude), and the ligamentum patellæ of the supported leg be smartly struck just below the knee-cap with the side of the hand, a sudden contraction takes place of the quadriceps femoris muscle (of which the ligamentum patellæ represents the tendon), and the foot is consequently jerked upwards in a degree which varies in different individuals. Now in confirmed examples of locomotor ataxia this reaction does not take place. No matter on what part of the ligament below the knee-cap, or with what force the blow is struck, the foot hangs motionless. In order to establish with accuracy the absence of the phenomenon, certain precautions ought to be taken. The leg should be bare; the patient must not offer voluntary resistance to the movement of his leg, and the ligament should be struck with some hard implement which can be swung like a hammer. An ordinary wooden stethoscope answers very well if it is held loosely by the small end, and the blow given with the edge of the ear-piece. But, however administered, several blows should be struck on the ligament, slightly changing the position each time, as there is generally one spot from which the reaction is peculiarly energetic. This is usually a little below, but very near to, the patella.

The tremor of cerebro-spinal sclerosis may be mistaken for that of paralysis agitans. HAMILTON gives the following points of difference:

PARALYSIS AGITANS.

Tremor continuous but not increased by voluntary effort.

Tremor regular and "fine."

Facial muscles not affected.

CEREBRO-SPINAL SCLEROSIS.

Tremor subsides during repose, and is always aggravated by volitional efforts at control.

Tremor "coarse."

Usually cranial nerve paralysis, or tremor of facial muscles.

PARALYSIS AGITANS.	CEREBRO-SPINAL SCLEROSIS.
Runs forward to preserve balance.	Only staggers when walking is attempted.
Speech slow or affected by the violence of muscular movements.	Speech defects those which arise from paralysis.
A disease of old age or advanced life.	Usually a disease which appears before middle life.

REFLEX PARAPLEGIA AND PARAPLEGIA FROM MYELITIS.

In reflex paraplegia the paralysis is incomplete; there is no change in the appearance of the limbs; no atrophy; no impairment of the muscular contractility; no involvement of the sphincters (unless prior to the paralysis); no tendency to the formation of bed sores; no alkalinity of the urine; little or no sensory impairment, nor anæsthesia. All these symptoms, on the other hand, are present in myelitis. In one word, the phenomena of reflex paraplegia have a *superficiality* which cannot escape close observation (J. K. BAUDUY).*

In the frequent cases where reflex paraplegia is due to irritation of the genito-urinary system, the differential diagnosis has been very clearly set forth by Dr. BROWN SÉQUARD in the following comparative table.†

PARAPLEGIA.	
FROM URINARY REFLEX IRRITATION.	FROM MYELITIS.
1. Is <i>preceded</i> by an affection of bladder, kidneys or prostate gland.	1. Usually no disease of the urinary organs except as consequent on the paralysis
2. Usually lower limbs alone paralyzed.	2. Usually other parts paralyzed besides the lower limbs.
3. No gradual extension of the paralysis upwards.	3. Most frequently a gradual extension of the paralysis upwards.

*Lectures on Diseases of the Nervous System, p. 340.

†Lectures on the Diagnosis and Treatment of Paraplegia, p. 33.

FROM URINARY REFLEX IRRITATION.

4. The paralysis is usually incomplete, an extreme debility or weakness of the limbs rather than paralysis.

5. Some muscles more paralyzed than others.

6. Reflex power neither much increased nor completely lost.

7. Bladder and rectum rarely paralyzed; or at least only slightly so; sphincter ani weak.

8. Spasms in paralyzed muscles extremely rare.

9. Very rarely pains in the spine, either spontaneously or on application of pressure, percussion, or a hot, moist sponge, or ice.

10. No feeling of pain or constriction around the abdomen or chest.

11. No formication, pricking or disagreeable sensations of cold or heat.

12. Anæsthesia rare, the tactile sensibility being but slightly, if at all, impaired; but the muscular sense is almost lost.

13. Usually obstinate gastric derangement.

14. Variations in the degree of the paralysis corresponding with changes in the primary disease.

FROM MYELITIS.

4. Very frequently the paralysis is complete.

5. The degree of paralysis the same in the various muscles of the lower limbs.

6. Reflex power often lost; or sometimes much increased.

7. Bladder and rectum usually completely paralyzed or nearly so.

8. Always spasms, or, at least, twitchings.

9. Always some degree of pain existing spontaneously, or caused by external excitations.

10. Usually a feeling as if a cord were tied tightly around the body at the upper limit of the paralysis.

11. Always formications, or pricking, or both, and very often sensations of pricking or heat or cold.

12. Anæsthesia very frequent and always at least numbness.

13. Gastric digestion good, unless the myelitis has extended high up in cord

14. Ameliorations very rare, and not following changes in the condition of the urinary organs.

FROM URINARY REFLEX IRRITATION.

15. Usually the urine is acid, unless the urinary organs are diseased.

16. Cure of the paralysis frequently and rapidly obtained, or taking place spontaneously after a notable amelioration or cure of the urinary affection.

17. Usually muscles do not become atrophied, and temperature is little lowered.

FROM MYELITIS.

15. Urine almost always alkaline

16. Frequently a slow and gradual progress towards a fatal issue, and rarely a complete cure.

17. Atrophy of muscles of the paralyzed parts.

GENERAL PARALYSIS OF THE INSANE.

This curious disease, long unknown in the United States, has of recent years been frequently observed in the Northern and Eastern States, but so far, rarely or not at all in the South and West. It is a disease of advanced life, whose pathognomonic characteristics are constant troubles of motility, a progressive loss of mental power, and a constant belief on the part of the patient that he is perfectly well, and in the enjoyment of magnificent fortune and gigantic powers (*delires des grandeurs*).

The following are the progressive traits of the disease as generally observed :

PSYCHICAL SYMPTOMS.

1. General restlessness and unsteadiness of mind, with impairment of attention ; alternating with apathy and drowsiness.

2. A change in disposition and temper, and a general loss of self-restraint ; at first as regards trivial, social observances, and then as regards general conduct.

3. Impairment of the reflective powers, so that there is no logical and systematic development of thought.

4. General exaltation of thought, with a profusion of remembered images and ideas, and numerous extravagant desires.

5. Failure of memory and forgetfulness ; at first of words, and then of events.

6. Delirious conceptions, and the transformation of desires into be-

liefs, these being generally connected with personal greatness and power.

7. Hallucinations of the senses, in which remembered sense impressions are so vivid and intense as to spread to the periphery.

8. Maniacal restlessness and excitement, in which present impulses and feelings instantly pass over into action.

9. Increased mental weakness, with the incoherent and fragmentary repetition of the false ideas previously entertained.

10. Failure of the senses, with more marked impairment of memory.

11. Complete fatuity, passing into coma and death.

MOTOR SYMPTOMS.

1. Persistent contraction of the occipito frontalis muscle, and some dilatation of pupils, causing the eyes to be widely opened and the forehead wrinkled, and giving an expression of surprised attention to the face.

2. Persistent contraction and frequent tremors of the zygomatic muscles, giving a pleased and benevolent expression of countenance.

3. Slight muscular restlessness and unsteadiness.

4. Impairment of the power of executing fine and detailed movements, so that manipulative skill is lost while movements *en masse* are still well performed.

5. Fibrillar tremors of the tongue, and some loss of control over its movements, so that it is protruded with difficulty; is rolled about when protruded, and is suddenly withdrawn.

6. Twitchings of the nostrils and upper lip, with frequent tremors of the latter.

7. Impairment of articulation, which is thick, and wanting in distinctness.

8. An alteration in the voice, as well as thickness and hesitancy in speech.

9. Loss of control over the combined movements of the hand and wrist, so that the hand-writing generally deteriorates.

10. Changes in the pupils, which are at first irregularly contracted, and then become irregularly dilated.

11. An alteration in gait, which becomes unsteady; the more com

plex movements of the thighs, leg, and foot, and the balancing of the the pelvis on the hip joints, being performed with difficulty.

12. General muscular agitation and restlessness.

13. Gradual loss of power in the muscles of the face, tongue, neck, and limbs.

14. Spasmodic contraction of the masseter muscles, causing grinding of the teeth.

15. Convulsive seizures—most marked on one side of the body, and followed by transitory hemiplegia.

16. Loss of control over the sphincters.

17. Complete prostration of muscular strength and helplessness, and difficult deglutition.

18. Contractions of the muscles of the limbs, and paralysis of the muscles of respiration.

The main diagnostic difficulty is to distinguish this from some phases of locomotor ataxy. The differences are that in general paralysis the mental symptoms are always present, and always precede the motor phenomena. The first symptoms in general paralysis are chiefly cerebral; viz., mental excitement, great garrulity, noisy hilarity, bragging, early violence of behavior, and very usually some exhibition of libidinous conduct; on the subsidence of excitement, the mind is found to be weak, and the motor phenomena gradually make their appearance.

In ataxia, the commencement is in the spinal functions. There is first an attack of pain of some remote part, occurring most frequently in the lower extremities, and dating several years back, considered at the time perhaps to be rheumatic; this pain is worse towards evening, or when the patient is not mentally occupied; it may improve or disappear for a time and return. Then follows a slight degree of numbness of the part; the patient feels as if he trod on wool; occasionally "pins and needles" attack the part; in fact, those phenomena which we have all experienced after sitting in an awkward position, when one's own leg has "gone to sleep." There is, as most of us know, want of feeling, want of recognition of the member, especially as to its size, and even its ownership, then atrocious pain, and pins and needles. In the disease, on the subsidence of the pain, the patients

exhibit some awkwardness in gait; the ataxy or want of order on the movement is evident. These symptoms may extend over ten or twelve years with very little change, except, perhaps, increasing awkwardness in gait; there is doubtless some numbness of the cutaneous surface in the course of the disease; the phenomena appear to spread upwards by involving the functions of the nerves higher up; the erection of the penis, and soon afterwards the sexual appetite, are lost, and the disease ascends; the expulsory power of the bladder and rectum become impaired. All this occurs while little change takes place in the mental functions; but in other cases the mind appears imbecile, the memory is affected, and there is distinct alteration in behavior and conduct; but there are no lofty ideas, no excessive excitement and garrulity, and in no case paroxysms of violence or libidinous ideas.

The differences may be better seen in a tabulated form:

GENERAL PARALYSIS.	LOCOMOTOR ATAXY.
Runs its course in a few years.	Is much slower usually, and may last ten or even twenty years.
Commences with mental symptoms.	Commences with pain in a distal nerve.
Is attended with libidinous ideas.	Is attended with absence of sexual feeling.
The motor symptoms are secondary in the order of time.	The motor symptoms are the primary phenomena.
Is only rarely complicated with pelvic difficulties.	Pelvic symptoms are a prominent feature
There often is great violence.	The mental phenomena are imbecility and impaired memory.

There is also a form of general paralysis due to syphilis. The differential features of this variety have been clearly defined by Dr. E. C. SEGUIN.* We do not obtain the regular gradations and stages of the true disease. The moral perversion which is peculiar

* *Hospital Gazette*. Sept., 1878.

to general paralysis is absent, neither do we see the pure exalted notions. The fibrillary tremors that are so well marked in general paralysis are not present here. The articulation is more mumbling in character. We, likewise, are apt to have a great deal of actual paralysis of cranial nerves or body in these cases. In true general paralysis, after attacks of hemiplegia, the patient regains his full strength, whereas this is not apt to occur in the syphilitic variety. The following table will perhaps show clearly the main differences:

SYPHILITIC GENERAL PARALYSIS.	TRUE GENERAL PARALYSIS.
Absent.	Prodromic stage.
Rare or absent.	Exalted notions, numerous and varied, and relatively exalted according to the position in life.
Speech is thick.	Speech is tremulous and jerky.
Absent as a rule.	Tremor of hands and lips.
Paresis or actual paralysis.	Preservation of strength.
Apt to be open or wide.	Pupils are apt to be contracted.
Palsy of third or of other cranial nerves.	None.
Headache nocturnal.	None.
More serious aphasic attacks.	Transient aphasic attacks.
Progressive except under treatment.	Spontaneous remissions.

Some other differences between the two conditions are as follows: The patient with syphilis has none of the cravings or abnormal appetites of the other; the latter feels an impulse to get drunk or to have an excess of coition. The tendency to excessive coition is absent in syphilitic paralysis, and indeed there is a marked loss of the virile power. The temperature changes are also absent in syphilis of the brain. The rise in temperature in general paralysis of the insane is very great, often reaching 103° in exacerbations. There is no rise of

temperature in syphilis of the brain except, perhaps, when the patient has hemiplegia from a large lesion.

The most important point is, that in syphilis, there is a paralysis; in general paralysis there is irritation and incoördination without true paralysis.

PSEUDO-HYPERTROPHIC PARALYSIS.

This is a disease of children, usually attacking them in the second year of life. At that period it is found that when they are placed upon their feet, they fall down, or clutch at the nearest object to support themselves; or in other cases it may be that the child has commenced to walk, when without pain or fever, or sometimes after convulsions, it is found to be soon fatigued, either by walking or standing, and at length it can no longer walk or hold itself upright; or, again, it may be that the child does not walk until very late, $2\frac{1}{2}$ or 3 years, and then very feebly and imperfectly.

Symptoms.—The principal morbid phenomena are, as Dr. DUCHENNE gives them—

1st. In the beginning, feebleness of the lower limbs.

2d. Lateral balancings of the trunk and widening of the legs during walking.

3d. A peculiar curvature of the spine (ensellure), or saddle-back (lordosis), both in walking and standing.

4th. Equinism (talipes equinus), with a peculiar over-extension of the first phalanges of the toes, which DUCHENNE calls “griffe des orteils.”

5th. Apparent muscular hypertrophy.

6th. Stationary condition.

7th. Generalization and aggravation of the paralysis.

When the disease has arrived at the stage of apparent hypertrophy, the appearance of the patient is very characteristic, and its true nature would be at once obvious to any one who had any knowledge of its symptoms; but in the earlier stages there is but little to guide us to a diagnosis unless we have some hereditary history. Of the hereditary nature of this affection the published cases give ample proof.

PARALYSIS FROM LEAD POISONING.

In this form of paralysis the usual diagnostic symptoms, to wit, a history of exposure to lead, the blue line on the gums, constipation and colic, may all be absent; hence the diagnosis must rest upon the peculiar characters of the palsy—especially the effects of electric currents upon the muscles. These are the only reliable evidences of the nature of the disease. These characteristic reactions, first described by DUCHENNE, are as follows:

Excitability to Faradism absent or sensibly diminished in all the muscles of the forearm except the supinators longus and brevis. In health the supinator brevis can not be directly Faradized on account of its deep position. But in lead palsy it very often happens that the wasting of the extensor communis digitorum has proceeded far enough to uncover the supinator brevis sufficiently to allow a small reophore to be applied to it in the space of about a square inch at the upper and back part of the forearm. If it be found (both arms being affected) that the common extensor fails to respond to Faradism whilst the short supinator close by, on a lower plane, is readily excited by it, the case may be positively set down as one of lead palsy.

NEURALGIA.

The positive signs which distinguish a case of pain to belong to the neuralgiæ are succinctly set forth by Dr. FRANCIS E. ANSTIE* as follows:

(1) The first and most essential characteristic of a true neuralgia is that the pain is invariably either frankly intermittent, or at least fluctuates greatly in severity, without any sufficient and recognizable cause for these changes.

(2) The severity of the pain is altogether out of proportion to the general constitutional disturbance.

(3) True neuralgic pain is limited with more or less distinctness to a branch or branches of particular nerves; in the immense majority of cases it is unilateral, but when bilateral it is nearly always symmetrical as to the main nerve affected, though a larger number of

**Neuralgia and its Counterfeits*, p. 565.

peripheral branches may be more painful on one side than on the other.

(4) The pains are invariably aggravated by fatigue or other depressing physical or psychical agencies.

These four cardinal points of the diagnosis may be further supported by the history of the patient. Either (1) he has previously been neuralgic, or liable to other neuroses, or comes of a neurotic family; or (2) there has been malarial poisoning of the blood; or (3) there has been some long continued peripheral or central irritation; or (4) finally, there has been constitutional syphilis.

The pains with which neuralgia is most likely to be confounded are those arising from myalgia, spinal irritation, locomotor ataxia, cerebral abscess, alcoholism, syphilis, chronic rheumatism, and latent gout.

In comparing the pains of myalgia and neuralgia the following are the more important points :

NEURALGIA.

Follows the distribution of a recognizable nerve or nerves.

Accompanies an inherited or acquired nervous temperament which is obvious.

Is usually not much or at all aggravated by movement.

Is at first not accompanied by local tenderness.

Painful points, when established in a later stage, correspond to the emergence of nerves.

Pain not materially relieved by any change of posture.

MYALGIA.

Attacks a limited patch or patches that can be identified with the tendon or aponeurosis of a muscle which, on inquiry, will be found to have been hard worked.

Often occurs in persons with no special neurotic tendency.

Is inevitably and very severely aggravated by every movement of the part.

Distinguished from the first by localized tenderness on pressure as well as on movement.

Tender points correspond to tendinous insertions and origins of muscles.

Pain usually completely and always considerably relieved by full extension of the painful muscle or muscles.

Treatment also offers a diagnostic means. The pains of myalgia will ordinarily disappear at once by retaining the affected muscle at full extension, surrounding it with moist warmth, and giving 20 or 30 grains of muriate of ammonia internally.

Spinal Irritation (spinal congestion or spinal anæmia) is almost exclusively confined to women. There are nearly always hysterical symptoms, marked superficial tenderness over large portions of the surface, often merely cutaneous and becoming less acute with firm pressure. There are nearly always tender spots along the spine, and also over the epigastrium and the left hypochondrium.

Locomotor ataxia is mentioned elsewhere, and its symptoms described in sufficient detail. (See the Index.)

Cerebral abscess, though rare, may give rise to a regrettable mistake, especially in its early stages, where severe pain in the head is almost the only conspicuous symptom. At this period the diagnosis from neuralgia must rest on the following points of contrast :

CEREBRAL ABSCESS.

Often occurs secondarily to caries of internal ear, and purulent discharges, the result of scarlet fever, measles, etc., in childhood.

Frequently follows a blow or injury.

No true "points douloureux."

Usually the pain does not completely intermit.

Pain often excruciating from a very early period.

Pain often limited in situation, seems deep-seated, though as often as not it has no relation to the site of the abscess.

NEURALGIA OF THE HEAD.

Rarely appears before puberty.

Comparatively seldom caused by a blow or other external injury, or caries of the bone.

If severe, soon presents, in most cases, the points douloureux.

Intermissions of pain complete and of considerable length.

Pain usually not very violent at first.

Pain superficial; follows distribution of recognizable nerve branches belonging to the trigeminus or great occipital.

CEREBRAL ABSCESS.

No well localized vaso-motor or secretory complications.

Very rare in old age ; then usually traumatic.

Relief from stimulant narcotics very transitory.

NEURALGIA OF THE HEAD.

Usually lachrymation, or congestion of the conjunctiva, etc.

Severe neuralgia is commonest in advanced life.

Relief from opium, etc., is much more considerable and permanent.

The pains of *chronic alcoholism* often closely simulate those of true neuralgia. The habits and history of the patient, when known, point to the true origin of the suffering ; also the insomnia, loss of appetite, foul breath, furred tongue and haggard countenance of the drunkard ; and especially that the pains complained of *encircle the limbs near the joints*, rather than run longitudinally the course of the nerves in the limb, are all significant.

The osteocopic pains of *syphilis* are usually symmetrical ; are aggravated by the warmth of the bed ; are generally referred to the superficial bones, and do not exist long without some other and decisive symptoms of the poison manifesting themselves.

Chronic rheumatism and gout are each attended with such marked collateral disturbances that the suspicion of their presence can readily be set at rest or sustained.

SPINAL IRRITATION.

This affection has been described by some writers as spinal hyperæmia, by others as spinal anæmia ; again as spasms of the spinal muscles, and lastly as abnormality of the spinal cells. Some have denied its existence altogether ; but in fact it is a distinctly defined and not unusual disorder. About five-sixths of the cases are females and it is often associated with uterine or ovarian disease ; and as often has some antecedent history of a blow upon or other slight injury to the spine.

Its symptoms are of the most varied kind, so much that it may simulate almost every known ailment ; but a *careful examination of the spine* will reveal its true character. The diagnostic rules laid down by Drs. WILLIAM and DAVID GRIFFIN, in 1834, who first de-

scribed the disease, have never been improved upon. They are as follows :

1. The pain or disorder of any particular organ complained of, is altogether out of proportion to the constitutional disturbance.

2. The complaints, whatever they may be, are usually relieved by the recumbent position, are always increased by lifting weights, bending, stooping, or twisting the spine ; and, among the poorer classes, are often consequent to the labor of carrying heavy loads, drawing water, etc.

3. The existence of tenderness at that point of the spine which corresponds to the disordered organ, and the increase of pain in that organ by pressure on the corresponding region of the spine.

4. The disposition to a sudden transference of the diseased action from one organ or part to another, or the occurrence of hysterical symptoms in affections apparently acute.

5. The occurrence of continued fits of yawning or sneezing. These are not very common in the disease ; but when they do occur, they may generally be considered as characteristic of nervous irritation.*

To this it may be added that the tenderness may extend along the spine generally ; but is always greater in one or two spots. Gastric symptoms, headache and languor are usually well marked in spinal irritation ; but there is neither atrophy, paralysis (except hysterical) nor waist constriction, which serve to distinguish it from a large class of spinal diseases.

HYSTERIA.

Few diseases present at times greater difficulties to diagnosis than this protean complaint. Its countefeits of various maladies will be considered elsewhere (see the Index) ; at present we shall seek for a pathognomonic symptom of the general condition.

One is offered by Dr. THOMAS BARLOW.† Rejecting as unsatisfactory all statements depending upon the patient's veracity, he finds a diagnostic test in the presence of *analgesia*. If, *while the patient's*

* *Functional Affections of the Spinal Cord* ; quoted by Dr. MCCALL ANDERSON.

† *Med. Times and Gazette*, Feb., 1878.

attention is directed to something else, a needle be introduced into the forearm and no wincing occurs, there is the strongest presumption that we have to do with a case of hysteria. Again, it has been long known that hysterical patients are often extremely tolerant of laryngoscopic examination. Great advantage will be found in examining a presumed hysterical patient's larynx, and thus fixing her attention whilst somebody at the same time inserts a needle into her forearm. Absolute tolerance of these two simple methods of examination is quite decisive.

Another characteristic relates to the pain so frequently complained of. While it is stated to be exceedingly acute, and the part tender to the slightest pressure, if the attention of the patient is engaged, very firm pressure may be made without the patient wincing. Moreover, there is noted very often a co-existence of severe pain in the epigastrium, the left side and spinal column—the *trepied hystérique*, or hysterical tripod of French authors.

The *globus hystericus*, a sensation of a foreign body in the throat caused by spasmodic contraction of its muscles, is a common symptom. The urine may be suppressed, or may be limpid and watery, and of unusual quantity.

If with these traits are united youth and female sex; ovarian or uterine disturbance; the general symptoms harmonious and exaggerated; the mind clear; and the disappearance of contractions, etc., under anæsthesia; the diagnosis is complete.

The most serious mistake would be the confounding of a hysterical paroxysm with an epileptic fit. The following table of distinctions between the two is given after CHARCOT and DA COSTA :

EPILEPSY.

Sudden and complete loss of consciousness.

Livid face ; escape of frothy saliva from the mouth ; eyelids half open ; eye-balls rolling ; grinding of the teeth ; biting of the tongue ; more or less insensibility of the pupils to light.

HYSTERIA OR HYSTERO-EPILEPSY.

Gradual or only partial or apparent unconsciousness.

Face flushed or complexion unaltered ; no froth on lips ; eyelids closed ; eyeballs fixed ; neither grinding of the teeth nor biting of the tongue ; pupils react readily.

EPILEPSY.

Distortion of countenance.

Patient evinces no feeling.

Aura epileptica of short duration.

Convulsions often more marked on one side than on the other; and more tonic than clonic. Agitation maniacal and disorderly.

Paroxysm generally of short duration.

Paroxysm followed by a heavy, half comatose sleep, by headache, and dullness of intellect. Stertor. No hallucinations.

Frequently occurs at night.

No particular connection with uterine disturbance; although a paroxysm often takes place at the menstrual period.

HYSTERIA OR HYSTERO-EPILEPSY.

No distortion of countenance.

Patient sighs, or laughs, or sobs.

Aura often prolonged one or two days. Globus hystericus.

No such differences; convulsions clonic. Agitation emotional, often *en pose*.

Paroxysms generally of longer duration.

Paroxysm not followed specially by sleep; patient often, after attack, wakeful and depressed in spirits. Little or no stertor. Hallucinations.

Rarely occurs at night.

Often connected with disorders of the uterus, or of menstruation.

Hysterical Paralysis, in spite of its frequent close imitation of the organic forms, is readily diagnosed by attention to the following points:

1. In hysterical hemiparesis the face is rarely, and the tongue never, affected.

2. In hysterical paraplegia incontinence of urine is never present. (HAMILTON.)

3. No amount of help can keep the patient from staggering or falling when she attempts to walk. (REYNOLDS.)

4. The foot in walking is simply dragged along and not swung as in organic hemiplegia. (TODD.)

5. In all sudden cerebral palsies, the nails of the affected extremities cease to grow. In hysterical palsies, of one limb or both,

whether paraplegic or hemiplegic, the rate of nail growth is unaltered. (WEIR MITCHELL.)

INSANITY.

The treatment of the insane is now almost confined to institutions for the purpose, but the detection of its earlier phases must always remain part of the duty of the general practitioner.

Insanity is divided into two forms, *mania* and *melancholia*, their general distinctions, as defined by Dr. E. C. SEGUIN, being as follows:

MANIA.

Ego elated and over active.

Joy and excitement generally prevail, sometimes comic emotions characterize attacks.

Over-ideation and over-action. Resulting therefrom incoherence and delirium and violent acts; general restlessness.

Insomnia.

MELANCHOLIA.

Ego is depressed and does not react normally on external world.

Sadness and fear; religious feelings strongly developed.

Reduced ideation. { few motions and
even absolute
silence.

Reduced action. { Immobility relative or total and
even cataleptoid
state.

Insomnia (less marked).

PHYSICAL SYMPTOMS.

Increased circulation.

Increased calorification.

Increased (?) assimilation.

Increased voracity.

Lessened circulation.

Lessened calorification.

Lessened assimilation.

The earliest symptoms of insanity are a marked change in the habits; proneness to excitement and loss of control; an alteration in the emotions; failure of memory; untidiness of dress; insomnia and disturbing dreams; unusual loquacity or taciturnity; defective reasoning;

accepting as real various fancies and illusions ; a furtive, watchful air ; groundless suspicions of those around. In combination with these mental symptoms there are often dilation of the pupils, frequently irregular, and sluggish in obeying the stimulus of light ; and a pulse hard, rapid and variable, 100 or over, and the pulse not equal in both wrists (HENRY HOWARD). The tongue is pasty, the breath foul, and the bowels constipated. The digestion is impaired, and the appetite irregular and capricious.

CHAPTER II.

DISEASES OF THE RESPIRATORY SYSTEM.

DISEASES OF THE LARYNX.—*Symptoms of Laryngeal Diseases. Diagnostic table of Acute Laryngitis, Chronic Laryngitis, Syphilitic Laryngitis, Tubercular Laryngitis, Preichondritis, Benign Growths, Malignant Growths, and Neuroses of the Larynx. Croup and Diphtheria; Spasmodic Croup, Inflammatory Croup, Membranous Croup, and Diphtheria. Tonsillitis, Catarrhal and Parenchymatous.*

DISEASES OF THE LUNGS.—*The Regions of the Chest. Normal Differences between the two sides of the Chest. Methods of Physical Examination. Normal Respiratory Sounds. Normal Voice Sounds. Abnormal Percussion Sounds. Abnormal Respiratory Sounds. Abnormal Voice Sounds. General Rules for Diagnosis. The Forms of Phthisis (Catarrhal, Fibroid, Tubercular). The Diagnosis of Incipient Phthisis. Diagnosis between Incipient Phthisis and Bronchitis. Clinical History of Phthisis. Acute Phthisis. Syphilitic Phthisis. Bronchitis, Acute and Chronic. Capillary Bronchitis compared with Pneumonia. Pneumonia and Pleurisy. Pleurisy with Effusion and Pneumonia with Consolidation compared. Diagnosis between Pneumonia and Pulmonary Apoplexy. Pulmonary Embolism. Asthma. Pneumo-thorax and Pneumo-hydrothorax. Emphysema, Vesicular and Interlobular. Cancer of the Lung.*

The diseases of the respiratory organs include those of the larynx and lungs. We commence with :

DISEASES OF THE LARYNX.

The general symptoms of laryngeal diseases, together with their causes and examples, may be arranged in the following tabular form:

SYMPTOMS OF LARYNGEAL DISEASES.

<i>Symptoms.</i>	<i>Cause.</i>	<i>Examples of Disease.</i>
Dysphonia.	Alteration in the vocal cords from thickening ulceration, diminished tension, morbid growths, etc.	Acute and chronic laryngitis. Laryngeal phthisis. Papillomata, etc.
Aphonia.	Non-approximation of the vocal cords, either mechanical or due to paralysis of some of the muscles attached to them.	Cicatrization. Swelling of arytenoid cartilages. Tumors. Hysteria. Pressure on recurrent laryngeal nerves, etc.
Dyspnœa.	Narrowing of the orifice of the glottis.	Paralysis of muscles opening glottis. Laryngismus stridulus. Edema, growths and cicatrices contracting rima glottidis, and pressure external to larynx.
Stridor.	Always accompanied by dyspnœa, and produced by the same causes.	As in Dyspnœa.
Cough.	Irritation of the laryngeal mucous membrane, or the nerves of the larynx.	In most laryngeal diseases, it is of a peculiar shrill, brazen character.

In the study of laryngeal diseases the use of the laryngoscope is indispensable to correctness of diagnosis. We take it for granted that the practitioner is conversant with this instrument, and the proper methods of employing it. It reveals the physical or object-

ive local symptoms, which are of much more value than the subjective ones derived from the patient's statements.

Laryngitis has been divided by some writers into the following forms :

Œdematous laryngitis.

Catarrhal laryngitis.

Erysipelatous laryngitis.

Croupous laryngitis.

Diphtheritic laryngitis.

Syphilitic laryngitis.

Tubercular laryngitis.

Exanthematous laryngitis.

Traumatic laryngitis.

For the present we will adopt the classification proposed by Mr. LENNOX BROWNE, of London, who in his recent work on the *Diseases of the Larynx* gives the diagnostic table presented in the following pages.

<i>Symptoms.</i>	<i>Acute Laryngitis.</i>	<i>Chronic Laryngitis.</i>
A. — Functional or Subjective.		
VOICE.	Hoarse, becoming aphonic.	Hoarse, uncertain, easily fatigued.
RESPIRATION.	Not embarrassed prior to œdema; then stridor, dyspnoea, and even apnoea.	Seldom embarrassed.
COUGH.	Dry, hard, shrill, metallic; aphonic; on exudation, moist.	Irritation, with slight expectoration of glutinous pellets.
DEGLUTITION.	Painful when œdema has taken place, or from associated pharyngeal inflammation.	Rarely affected.
PAIN AND ALTERED SENSATION.	Sensation of tightness and constriction; tender to external pressure.	Painless; sense of fatigue after vocal exercise.
B. — Physical or Objective.		
COLOR.	Intense, uniformly increasing superficial hyperæmia; translucent on advent of œdema.	Partial and modified submucous hyperæmia.
FORM AND TEXTURE.	Thickening and stenosis from œdema, loss of tissue rare, except in phlegmonous form.	Occasionally slight erosion, never ulceration, thickening or narrowing.
POSITION.	Unaltered.	Unaltered.
C. — Miscellaneous.		
EXTERNAL.	Pharynx usually synchronously implicated.	Pharynx usually synchronously implicated.

<i>Syphilitic Laryngitis.</i>	<i>Tubercular Laryngitis.</i>
<i>Sec^y</i> . Hoarse.	Sometimes aphonic in earlier stages ; completely lost in advanced disease.
<i>Tert^y</i> . Characteristically raucous ; seldom aphonic.	Early hurried ; greatly embarrassed with advance of disease.
<i>Sec^y</i> . Unchanged.	Greatly influenced by amount of lung disease ; painful.
<i>Tert^y</i> . Increasing embarrassment according to amount of stenosis.	Expectoration variable ; generally frothy.
<i>Sec^y</i> . Slight hacking.	Extremely difficult and painful, from early period to termination.
<i>Tert^y</i> . Infrequent, with but slight expectoration, unless perichondritis supervene.	Pain only experienced in functional acts.
<i>Sec^y</i> . Normal, unless deposit on epiglottis or arytenoids.	Anæmia followed by opaque grayish color ; margins of ulcers hyperæmic.
<i>Tert^y</i> . Often difficult ; very rarely painful.	Solid submucous thickening of epiglottis and ary-epiglottic folds, elevation and ulceration of racemose glands giving worm eaten ulcers, which commingle and attack deeper tissues.
Characteristic absence of pain except when cartilages are attacked.	No displacement ; tendency for thickened parts to transgress boundaries of pharynx.
<i>Sec^y</i> . Mottled, more or less symmetrical hyperæmia.	Lungs either primarily, synchronously, or subsequently involved. Generally anæmia, rarely ulceration of pharynx. General emaciation.
<i>Tert^y</i> . Hyperæmia of portion attacked prior to ulceration : permanent infiltrated appearance.	
<i>Sec^y</i> . Occasional superficial ulceration at vocal process ; slight general submucous infiltration.	
<i>Tert^y</i> . Deep, circumscribed destructive ulcers, of yellowish color, followed by cicatricial narrowing, occasionally paralysis and quasi-new formations.	
<i>Sec^y</i> . Unaltered.	
<i>Tert^y</i> . Deformity from intrinsic cicatrices and pharyngeal outgrowths.	
<i>Sec^y</i> . Pharynx and skin generally recently implicated.	
<i>Tert^y</i> . Seldom synchronous implication, but usually scars of previous similar pharyngeal ulceration, and possible adhesion.	

<i>Symptoms.</i>	<i>Perichondritis.</i>	<i>Benign Growths.</i>
A.— Functional or Subjective.		
VOICE.	Painful, easily fatigued, but not necessarily impaired.	Very variable, from slight hoarseness to complete aphonia, even in the same case.
RESPIRATION.	Variable, according to cartilage attacked.	Seriously embarrassed in one-sixth of cases; depends on situation.
COUGH.	Generally early spasmodic; with caries characteristic. Purulent expectoration, unless abscess is encysted.	Generally limited to effort to dislodge foreign body; may be expectoration of atoms of growth.
DEGLUTITION.	Varying from dysphagia to aphagia, according to pressure on gullet.	Only impaired in rare cases, in which epiglottis or ary-epiglottic fold is involved.
PAIN AND ALTERED SENSATION.	Pain variable with cause; most severe in gouty form, but not then constant.	Characteristically absent.
B.— Physical or Objective.		
COLOR.	Hyperæmia generally limited to portion attacked, sometimes extending to contiguous vocal cord.	Variable with nature of neoplasm; slightly increased vascularity of mucosa generally.
FORM AND TEXTURE.	Ulceration often absent, substituted by encysted abscess, causing narrowing, compression and paralysis.	Varies with situation, size, and nature of growth, never ulceration. May cause narrowing and paralysis.
POSITION.	May be considerable alteration of supra and infra-glottic space.	Position of normal parts seldom changed.
C. — Miscellaneous.		
EXTERNAL.	Occasional constitutional manifestations.	Nil.

<i>Malignant Growths.</i>	<i>Neuroses.</i>
Impaired by mechanical causes when invaded from pharynx; may be early lost in primary disease.	Lost in bilateral paralysis of adductors; impaired in other paralyses; not necessarily in spasm.
Early quickened on exertion; later paroxysmal dyspnoea from stenosis or compression.	Only embarrassed in paralyses of adductors and in spasmodic affections.
Not necessarily present; expectoration scanty; occasionally blood and portions of neoplasm.	Paroxysmal, when recurrent is implicated and in spasmodic affections.
Always difficult and painful: often the earliest symptom.	But slightly impaired or unaffected.
Ever present and severe, extending upwards to the ears, and to sympathetic glandular enlargements.	Only experienced when sensory system affected. Diminished sensation in motor paralyses and in anæsthesia.
Increasing localized vascularity tending to lividity in any part except vocal cords or ventricles, when neoplasm is whitish-grey or pale rose.	In paralysis of abductors, occasional vascularity of affected vocal cords.
May cause compression, narrowing and paralysis before ulceration, which is always accompanied by thickening. Extensive indolent, grey, greenish, or almost black ulcers.	Form of glottis varying with nature of paralysis, without extrinsic thickening.
Early displacement, especially when invading from pharynx, and when neighboring glands enlarged.	Paralyzed cord not displaced, but often fixed in one position.
Glandular infiltration, but complete immunity of other organs of body from similar disease both prior and subsequent to appearance in laryngo-pharynx. General emaciation.	Sympathetic functional disturbances in other organs, or organic disease of cardiac or lymphatic system, or associated cerebral disease or chronic toxæmia.

The chronic laryngitis of syphilis cannot with certainty be distinguished from the other forms of chronic laryngitis without inquiry into the history of the case.

In tertiary syphilis there is deep and extensive ulceration, not necessarily preceded by thickening; the epiglottis is attacked early, the ulceration is often followed by cicatrization and contraction, causing stenosis of the larynx.

CROUP AND DIPHTHERIA.

The general sign common to this class of diseases is a *laryngeal stridor*; they are divided into those where there is a formation of false membrane and where there is not.

Without false membrane.

Spasmodic croup or laryngismus stridulus.

Inflammatory croup, simple catarrhal laryngitis.

With false membrane.

True croup or membranous croup.

Diphtheria.

The differential diagnosis between spasmodic and simple inflammatory croup is as follows:

INFLAMMATORY CROUP.	SPASMODIC CROUP.
Onset gradual, with sore throat, tickling, tenderness of larynx and catarrh.	Onset sudden, usually at night, with few or no prodromal symptoms.
Increasing difficulty in swallowing.	Difficulty of swallowing absent or temporary.
Flushed face, hot, dry skin, high temperature (105°), frequent pulse.	Febrile symptoms much less marked.
Mucous membrane of larynx red and swollen, sometimes edematous.	Larynx little affected.
Remission but slight; local symptoms and pyrexia continue.	Intermission complete, or nearly so, between the croupous attacks.
In early life a dangerous disease.	Very rarely fatal.

Very considerable differences of opinion are entertained as to the formidable and frequent disease *diphtheria*. Some maintain its identity with membranous croup, others with scarlatina, while others again believe it is a malady distinct in origin, course, result and treatment from them both. The last mentioned opinion is that which has the most adherents, and the most facts on its side. The differences between the diseases are fully set forth in the table subjoined:

MEMBRANOUS CROUP.

Is a local complaint. Rarely or never occurs after puberty.

Is not contagious. Type sthenic.

Commences with a cough, catarrh and hoarseness; little or no sore throat and difficulty of swallowing. Cough shrill, metallic; breathing stridulous from the outset.

The membranous affection begins in the larynx and extends to the throat.

Fauces injected but rarely swollen, and generally without exudation.

Exudation never cutaneous.

No swelling of the submaxillary glands

Epistaxis and albuminuria absent.

Little and often no prostration of the general strength.

Improves under emetics, local counter-irritants, expectorants and depressants.

Is never followed by paralysis.

DIPHTHERIA.

Is a general disease, common to all ages.

Is decidedly contagious. Type asthenic.

Commences with a chill, sore throat, difficulty of swallowing; but neither hoarseness nor cough at the outset. Stridulous breathing a late symptom.

The membranous affection begins in the throat and extends to the larynx (DA COSTA).

Fauces injected, swollen and presenting exudations.

Exudation often cutaneous.

Submaxillary glands swollen.

Epistaxis and albuminuria frequent.

Considerable, often extreme prostration.

Demands a stimulating and sustaining treatment.

Subsequent paralysis not infrequent.

MEMBRANOUS CROUP.

Rarely fatal. Death from apnoea.
Blood not changed. Spleen not
affected.

DIPHTHERIA.

Frequently fatal. Death usually
by asthenia. Blood after death
usually fluid and dirty brown.
Spleen enlarged and softened (J. W.
HOWARD).

TONSILLITIS.

Inflammation of the tonsils assumes two forms, in one of which, the *catarrhal* form, the inflammation extends to the secreting tissues and lining membrane of the crypts, and in the other to the parenchymatous structure of the gland. These two forms differ widely in cause, in symptoms, in treatment and result. Their diagnostic symptoms, as tabulated by Mr. ARTHUR TREHERNE NORTON,* are as follows:

CATARRHAL TONSILLITIS.

Is a mucous inflammation of three
or four days duration.

Is caused by exposure to draft,
damp, cold, etc.

Prostration and often profuse per-
spiration. Pulse small and quick.
Never runs on to abscess.

Both tonsils affected.

Lacunæ filled with masses of mor-
bid secretion resembling ulcers.

No edema around.

Treatment. — Tonics, stimulants
and astringent gargles.

PARENCHYMATOUS TONSIL-
LITIS.

Is a fibrous inflammation of from
two to four weeks duration.

Often caused by neighboring in-
flammation, cutting wisdom teeth.

High fever with hot dry skin.
Pulse strong and hard. Commonly
forms an abscess.

Rarely both affected.

Often covered with lymph, but no
collection of secretion in lacunæ.

Extensive edema.

Treatment. — Antiphlogistics and
depressants, but never gargles, ex-
cept in the form of warm water.

* *Brit. Med. Journal*, Jan., 1874.

DISEASES OF THE LUNGS.

The study of Physical Diagnosis necessarily commences with a correct appreciation of the location of organs and their functions and sound in health; to which must follow a clear understanding of the specific and peculiar alterations which each of these elements undergoes when it becomes a factor in disease. To acquire this, we give on the following pages tabular arrangements of the following subjects:

I. The Regions of the Chest, their Contents and Normal Signs. II. The Normal Differences between the two Sides of the Chest. III. Methods of Physical Examination. IV. Normal Respiratory Sounds. V. Normal Voice Sounds. VI. Abnormal Resonance on Percussion, and its Causes. VII. Abnormal Intensity, Rhythm and Quality of Respiratory Sounds. VIII. Abnormal (dry) Respiratory Sounds. IX. Abnormal (moist) Respiratory Sounds. X. Abnormal (amphoric) Respiratory Sounds. XI. Abnormal Voice Sounds.

I. THE REGIONS OF THE CHEST.

<i>Region.</i>	<i>Contents.</i>	<i>Resonance on Percussion in Health.</i>	<i>Auscultation in Health.</i>
1. CERVICAL.	Larynx and trachea.		Tracheal breathing and voice.
2. SUPRA CLAVICULAR.	Apex of lung.	Clear.	Very pure vesicular murmur (scarcely audible); voice scarcely audible.
3. CLAVICULAR.	Clavicles and vesicular structure of lung.	Clear.	Pure vesicular murmur and scarcely audible voice, except at the sternal end, where there are bronchial breathing and bronchophony.
4. SUBCLAVIAN.	Vesicular structure of lung.	Clear.	Pure vesicular murmur and scarcely audible voice. Heart sounds on left side below.
5. MAMMARY.	Vesicular structure of lung. Heart on left side.	Clear on right side. Dull on left in greater part of region.	Pure vesicular murmur above. Heart sounds below on left side, and feeble vesicular murmur on right. Voice scarcely audible.

<i>Region.</i>	<i>Contents.</i>	<i>Resonance on Percussion in Health.</i>	<i>Auscultation in Health.</i>
6. INFRA-MAMMARY.	Anterior portion of base of lung. Stomach below, on left side, liver on right.	Generally tympanic on left side; dull on right.	Distinct vesicular murmur. Voice scarcely audible.
7. SUPERIOR STERNAL.	Division of trachea, aorta, and great vessels.	Clear.	Bronchial breathing and bronchophony.
8. INFERIOR STERNAL.	Anterior mediastinum above. Stomach below.	Clear above; tympanic below.	Pure vesicular murmur above, becoming feeble below. Voice scarcely audible.
9. AXILLARY.	Vesicular structure of lung.	Clear.	Pure vesicular murmur. Voice scarcely audible.
10. LATERAL.	Vesicular structure of lung.	Clear above; dull below on right side.	Pure vesicular murmur. Voice scarcely audible.
11. SUPRA-SCAPULAR.	Apex of lung.	Clear.	Pure vesicular murmur. Voice scarcely audible.
12. SCAPULAR.	Vesicular structure of lung.	Rather less clear.	Pure vesicular murmur. Voice scarcely audible.
13. INTER SCAPULAR.	Roots of lung and large bronchi.	Clear.	Bronchial breathing and bronchophony.
14. INFRA-SCAPULAR.	Base of lung.	Clear.	Very pure vesicular murmur. Voice scarcely audible.

II. NORMAL DIFFERENCES BETWEEN THE TWO SIDES OF THE CHEST. (A. H. SMITH.)

	<i>Right Side.</i>	<i>Left Side.</i>
<i>Percussion Resonance.</i>		A little more intense than on the right side.
<i>Vocal Resonance.</i>	Decidedly greater on the right side.	
<i>Bronchial Whisper.</i>	More intense than on the left, and a little lower in pitch.	
<i>Inspiratory Sound.</i>		A little lower on this side, more vesicular in quality, and slower in pitch.
<i>Expiration.</i>	Frequently prolonged in healthy individuals on this side.	

III. METHODS OF PHYSICAL EXAMINATION.

<i>Method of Examination.</i>	<i>Shows</i>	<i>Instruments Used.</i>
1. INSPECTION.	Form, symmetry and capacity of the chest. Local bulging, depression or retraction. Condition of intercostal spaces. Character and frequency of respiratory movements. Comparative size and degree of movement of the two sides. Position and extent of impulse of heart.	
2. PALPATION. (<i>Application of the Hand.</i>)	Comparative movement of the two sides. Vibration communicated to the chest-wall by the voice (vocal vibration or vocal fremitus). Force of the heart's impulse. Occasionally certain morbid phenomena, as pleural and pericardial friction, valvular thrill.	
3. MENSURATION— (<i>a</i>) <i>Of Size.</i>	Comparative size of the two sides of the chest.	Graduated tape. Cyrrometer.
(<i>b</i>) <i>Of Movement.</i>	Actual and comparative movement of the chest in respiration.	Dr. Sibson's stethometer. Dr. Quain's " Dr. Edward's chest calipers. Dr. Hutchinson's spirometer.
4. PERCUSSION.	Degree of resonance in various parts of the chest. Extent of cardiac dullness.	Plessor—A hammer tipped with india rubber. The first and second fingers of the right hand will be found to be the best plessor. Pleximeter—A thin plate of ivory or bone. The forefinger of the left hand will be found to be the best pleximeter.
5. AUSCULTATION.	Character of respiratory murmur. Abnormal respiratory sounds. Heart sounds. Abnormal cardiac sounds.	Stethoscope.—Made of wood, metal, or vulcanite. Dr. Scott Alison's bi-aural stethoscope.
6. SUCCUSSION.	Presence of air and fluid in pleural cavity.	

PERCUSSION may be—*Immediate*.—Where the chest is struck *directly*, without the interposition of any pleximeter.

(2) *Mediate*.—Where an instrument termed a pleximeter is interposed between the chest and the substance with which the stroke is made. This may be either a thin plate of ivory or bone, or, still better, the first and second fingers of the left hand.

AUSCULTATION may be—*Immediate*.—Where the ear is applied *directly* to the walls of the chest.

(2) *Mediate*.—Where the stethoscope is interposed between the ear and the walls of the chest.

IV. NORMAL RESPIRATORY SOUNDS.

<i>Sound.</i>	<i>Situation where heard.</i>
VESICULAR BREATHING.	All over the chest except the upper part of the sternum and the space between the scapulæ, the inspiratory sound being louder, and three or four times longer, than the expiratory.
PUERILE BREATHING.	Is the loud vesicular breathing of children, audible over the same parts of the chest as in ordinary vesicular breathing.
BRONCHIAL BREATHING.	Upper part of the sternum and the space between the scapulæ in many healthy persons.
TRACHEAL } BREATHING.	Over the trachea and larynx.
OR	
LARYNGEAL }	

V. NORMAL VOICE SOUNDS.

<i>Sound.</i>	<i>Situation and Character.</i>
ORDINARY VOCAL RESONANCE.	Is the voice sound heard over the pulmonary regions where vesicular murmur is audible. A muffled, diffused sound; the articulation of the voice is not appreciable.
NATURAL BRONCHOPHONY.	Heard over the upper part of the sternum, and between the scapulæ in a certain number of healthy persons. A more distinct and concentrated sound than the last variety.
LARYNGOPHONY AND TRACHOPHONY.	Voice-sounds heard over the larynx and trachea. Voice transmitted imperfectly articulated to the ear of the observer, with so much loudness and concentration as even to be painful.

VI. ABNORMAL RESONANCE ON PERCUSSION.

<i>Resonance.</i>	<i>Cause.</i>	<i>Examples of Disease.</i>
DIMINISHED in various degrees, or altogether ABSENT.	{ Deficiency of air in the lung beneath the part percussed, or solid or liquid matter between the walls of the chest and the lung containing air; or extreme distension of the chest with air.	{ Pneumonia, first stage. Phthisis; contracted lung, with thickened pleura. Œdema and congestion of lung. Tumors. Collapse of lung. Pneumonia, second and third stages. Intra-thoracic tumors and aneurisms. Effusions into pleural cavity, or its extreme distension by air.
INCREASED.	{ Air increased in quantity, or air in pleural cavity.	{ Emphysema. Tubercular cavity, having thin walls, and situated near the surface.
TYMPANITIC.	{ }	{ Pneumothorax. Extreme emphysema.
AMPHORIC.	{ A large cavity (or conditions resembling it) with very tense walls, containing air.	{ Upper part of lung compressed by fluid below.
BOX-LIKE.	{ }	{ Pneumothorax. Cavities.
CRACKED-POT SOUND.	Air expelled from cavity by sudden pressure.	Cavity of considerable size, with large bronchus opening into it, mouth of patient being open.

VII. ABNORMAL INTENSITY, RHYTHM AND QUALITY OF RESPIRATORY SOUNDS.

	<i>Sounds.</i>	<i>Chief Causes.</i>	<i>Condition of Organs.</i>	<i>Examples of Disease.</i>
I. Changes in Intensity.	FEEBLE BREATHING.	Air entering the air-cells in diminished quantity and force.	Lung partially solidified either by increase of solid or fluid within it, or by pressure from without; dilatation of the air-vesicles; in some cases lungs not affected.	Incipient phthisis. Bronchitis. Pneumonia, first stage. Pleurisy. Emphysema. Pleurodynia.
	EXTINCT BREATHING.	The presence of a non-conducting medium between the lung and the chest-wall, or some impediment to the entrance of air into the bronchi.	Lung solidified by pressure upon its surface; plug of mucus, fibrinous exudation or foreign body in the bronchi, or tumor compressing the bronchi.	Pleuritic effusion. Pneumothorax. Plastic bronchitis. Tumors.
	PUERILE SUPPLEMENTARY } BREATHING.	Air entering the air-cells with increased rapidity and force.	Healthy.	Disease of opposite lung or of other parts of the same lung. Met with as a normal condition in childhood.
II. Changes in Rhythm.	INTER- RUPTED JERKING COGGED-WHEEL } BREATHING.	Respiratory movements restrained by pain, or mental emotion, or some temporary local obstruction of the air-tubes.	Varies with the disease causing it.	Pleurodynia. Pleurisy. Debility, with palpitation. Hysteria. Incipient phthisis. Spasmodic asthma. Emphysema.
	PROLONGED EXPIRATION.	Loss of elasticity in the lung tissue.	Thinning of the walls of the air vesicles, with dilatation and destruction of the alveolar septa.	

		<i>Sounds.</i>	<i>Chief Causes.</i>	<i>Condition of Organs.</i>	<i>Examples of Diseases.</i>
III. Changes in Quality.	EXAGGERATED COARSE.	BREATHING.	Increased friction in the air-cells and smaller bronchial tubes.	Lung not solidified (soft sound).	Generally consistent with health and supplementary.
				Lung solidified or bronchial tubes obstructed (harsh sound).	Incipient phthisis.
	BLOWING TUBULAR or BRONCHIAL CAVERNOUS	BREATHING.	Friction of air in the bronchial tubes, or in cavities of the lung.	Condensation of the lung between chest wall and the larger bronchi or cavities.	Phthisis. Pneumonia. Tumors.
	AMPHORIC BREATHING.		Air passing into a large cavity with dense walls.	Cavities with dense walls.	Tubercular and other cavities. Pneumothorax. Dilated bronchi. Large cavities.

VIII. ABNORMAL DRY RESPIRATORY SOUNDS.

<i>Sound.</i>	<i>Situation.</i>	<i>Cause.</i>	<i>Example of Diseases.</i>
SIBILUS.	Lesser bronchial tubes.	Vibration of thick mucus attached to the wall of the tube, or contraction of the tube, due either to swelling or spasm; not easily removed by cough.	Bronchitis. Emphysema. Asthma.
RHONCHUS.	Larger bronchial tubes.	Vibration of thick mucus in tubes; generally easily removed by cough.	Bronchitis.

CLICKING OR CRACKLING.

DRY CRACKLING.	Smaller bronchi.	Separation of the adherent walls of the bronchi—the dry tending to pass into the moist variety.	Incipient phthisis.
HUMID CRACKLING.	Smaller bronchi.		Phthisis, first stage.
PLEURAL FRICTION SOUND.	Layers of pleura.	Movement of opposed surfaces of pleura roughened by the deposit of lymph or tubercle.	Pleurisy before effusion has commenced, or after absorption of the fluid.
CREAKING SOUND.			

IX. ABNORMAL MOIST RESPIRATORY SOUNDS.

<i>Sound.</i>	<i>Situation.</i>	<i>Cause.</i>	<i>Examples of Disease.</i>
CREPITANT RALE (<i>Fine or pneumonic crepitation.</i>)	Air-vesicles.	Opening up of collapsed air-cells, or separation of their adherent walls.	Pneumonia in first stage. Edema of lungs. Collapse.
SUBCREPITANT RALE (<i>Medium crepitation.</i>)	Smaller bronchial tubes.	Bursting of air-bubbles in fluid.	Capillary bronchitis. Phthisical bronchitis. Resolution of pneumonia. Edema of lung. Pulmonary apoplexy.
MUCOUS RALE (<i>Large crepitation.</i>)	Larger tubes and small or moderate-sized cavities.	Bursting of air-bubbles in fluid.	Phthisis. Bronchitis. Hæmoptysis.
GURGLING OR CAVERNOUS RALE.	Large cavities (or number of small cavities).	Bursting of air-bubbles in fluid.	Phthisis (3d stage). Bronchiectasis. Abscess of lungs.
CHURNING SOUND.	Lung in a state of disorganization.		Gangrene of lung.

X. ABNORMAL AMPHORIC SOUNDS.

<i>Sound.</i>	<i>Situation.</i>	<i>Cause.</i>	<i>Examples of Disease.</i>
SPLASH ON SUCCUSION.	Cavity of pleura or large cavity.	Sudden disturbance of air and fluid existing together in the pleura.	Pneumothorax with effusion. Very large cavity.
BELL SOUND.	Cavity of pleura.	Auscultation of an air-containing cavity, whilst an assistant uses two coins, one as a hammer, the other as a pleximeter.	Pneumothorax.
AMPHORIC ECHO AND METALLIC TINKLING.	Cavities.	Vibration of air in large cavities with tense walls. The former may be produced by râles and rhonchi in the chest, by the voice, and by the act of coughing; the latter requires, in addition, a little fluid at the bottom of the cavity, set in vibration by a momentary impulse, such as the fall of a drop of fluid, and is essentially the echo of a bubble.	Phthisis with very large cavities. Pneumothorax with effusion.

XI. ABNORMAL VOICE SOUNDS.

<i>Sound of Voice.</i>	<i>Character of Sound.</i>	<i>Cause.</i>	<i>Examples of Disease.</i>
FEEBLE OR ABSENT VOCAL RESONANCE.	The obscure humming or buzzing noise heard over the normal chest either very feeble or altogether absent.	Primary bronchus obstructed; non-conducting medium in pleura or rarefied condition of lung.	Tumors compressing or foreign body in bronchus. Pneumothorax. Hydrothorax. Pleuritic effusion. Emphysema.
EXAGGERATED VOCAL RESONANCE.	Voice-sounds unaltered in quality or distribution, but louder and of greater intensity than natural.	Increased resounding or conducting power due to consolidation of the lung, or to the formation of abnormal spaces.	Incipient phthisis. Dilatation of bronchi.
BRONCHOPHONY.	Voice-sounds heard louder, clearer, and more vibratory than natural, but unattended with articulation or tactile sensation to the ear.	Much increased resounding or conducting power.	Cavities due to phthisis or dilatation of the bronchi. Consolidation of the lung resulting from collapse, hæmorrhagic infarctions, pneumonia, phthisis, cancer, etc.
PECTORILOQUY.	Voice-sounds distinctly articulated and concentrated and as if spoken into the end of the stethoscope.	Large abnormal cavity with dense walls.	Phthisis, dilated bronchi, etc.
AMPHORIC RESONANCE OR ECHO.	A ringing metallic sound resembling that produced by speaking into an empty jar.	The voice reverberating in a large cavity with a small aperture.	Phthisis. Pneumothorax.
EGOPHONY.	A tremulous vibratory sound resembling the bleating of a goat, or the nasal Punchinello voice.	A thin layer of fluid in the pleural cavity, with condensed lung behind.	Pleurisy with effusion.

The late Dr. JOHN HUGHES BENNETT laid down the following practical

GENERAL RULES FOR THE DIAGNOSIS OF DISEASES OF THE RESPIRATORY SYSTEM.

1. A friction murmur heard over the pulmonary organs indicates a pleuritic exudation.
2. Moist or dry râles, without dulness on percussion, or increased vocal resonance, indicate bronchitis.
3. Dry râles accompanying prolonged respiration, with unusual resonance on percussion, indicate emphysema.
4. A moist râle at the base of the lung, with dryness on percussion, and increased vocal resonance, indicates pneumonia.
5. Harshness of the respiratory murmur, prolonged respiration and increased vocal resonance confined to the apex of the lung, indicate incipient phthisis.
6. Moist râles, with dulness on percussion, and increased vocal resonance at the apex of the lung, indicate either advanced phthisis or pneumonia, generally phthisis.
7. Circumscribed bronchophony or pectoriloquy, with cavernous dry or moist râle, indicates a cavity. This may be dependent on tubercular ulceration, a gangrenous abscess, or a bronchial dilatation. The first is generally at the apex, and the two last about the centre of the lung.
8. Total absence of respiration indicates a collection of fluid or of air in the pleural cavity. In the former case there is diffused dulness, and in the latter diffused resonance on percussion.
9. Marked permanent dulness, with increased vocal resonance and diminution or absence of respiration, may depend on a chronic pleurisy, on thoracic aneurism, or a cancerous tumor of the lung.

THE FORMS OF PHTHISIS.

The most recent writers, both in the United States and Europe, are agreed in recognizing three forms or varieties of phthisis.* It is of import, both to the prognosis and therapeutics of the case, to distinguish these aspects of the disease; and although in many cases the type is by no means prominently defined, in the majority there is no great difficulty in assigning them to one or another class. The three forms are:

1. Catarrhal or Inflammatory Phthisis: "Desquamative pneumonic phthisis." (BUHL.)

2. Fibroid phthisis. Cirrhosis of the lung. Chronic pneumonic phthisis. Bronchial phthisis. Laryngeal phthisis.

3. True tuberculosis, including acute miliary tuberculosis.

On the clinical recognition of these three varieties, Dr. ALFRED L. LOOMIS says:

If a case of phthisis presents himself for examination, and it is found that the disease began with the ordinary symptoms of a cold and that this cold periodically improved and relapsed, but that the cough never left him, but became more pronounced, and deepened into what we usually find in advanced phthisis, accompanied with emaciation and occasional hæmoptysis, we are in a position to say that the patient presents the usual characteristics of *catarrhal* phthisis.

If, however, he gives a history of persistent cough for many years as is found in chronic bronchitis, and eventually furnishes the rational history of advanced phthisis, with the presence of cavities on the lung, we may consider him as having the disease of the *fibrous* form, in which cavities are the result of dilated bronchi.

Finally, if the patient says that an early symptom was emaciation, with impaired digestion, accompanied by a dry, hacking cough, and if, moreover, there was a steady rise in the temperature, we are justified in suspecting the presence of *tubercular* phthisis.

* Dr. A. B. SHEPHERD, *Med. Press and Circular*, July, 1876; A. L. LOOMIS, N. Y. *Med. Journal*, Feb., 1877; Roswell Park, Chicago, *Med. Journal*, Sept., 1878, etc,

COMPARISON OF THE FORMS OF PHTHISIS.

PERIOD OF INVASION.

Catarrhal.

Precursory catarrh, sometimes pneumonia, croup, measles, or other inflammatory disease; cough "deepens," proceeding from the trachea to the alveoli and bronchioles, indicated by dark yellow streaks in the sputum. Fever and wasting not marked at outset. Haemoptysis not common at this period.

TEMPERATURE.

The hectic is more of a *remittent* or *intermittent* than of a continued type; with a range of, say, 1.1° C. between evening and morning temperature; the evening elevation being a constant feature.

The fever may present all possible variations in the same individual. A sudden accession may be regarded as an indication of some fresh inflammatory process; *e. g.*, pleuritis, pneumonia.

With marked evening rise of temperature, the rate of respiration does not correspondingly accelerate; hardly ever more than six or eight breaths per minute.

PHYSICAL SIGNS.

In the first stage, feeble, harsh or puerile respiratory sounds are heard, with all the signs of catarrh at apices.

Dullness usually marked; when its area accords with the other signs it is a comparatively favorable feature.

The presence of lobular infiltration may, in some cases, cause a hollow or tympanitic note.

"Cracked-pot" resonance over a cavity with thin walls.

Fremitus is intensified over cavities connecting with bronchi and containing air.

Bronchial respiration, bronchophony, and sonorous râles are heard after extensive induration.

COMPARISON OF THE FORMS OF PHTHISIS.

Fibroid.

More or less dyspnœa, gradually increasing. Cough, worse in winter, sometimes absent in summer. Hæmoptysis not infrequent. Pulse slightly rapid, perhaps irregular. Expectoration often profuse, mucous or mucopurulent.

Elevation of temperature and other febrile symptoms very variable, sometimes wholly absent (BRISTOWE). No special type.

Notable dullness on percussion, the diminished resonance being sometimes tympanitic. Respiration bronchial, or broncho-vesicular. Bronchophony and increased vocal resonance. The affected side becomes contracted either entirely or in part.

Tubercular.

Commences in the alveoli, bronchioles, or connective tissue. Pallor, fever, emaciation and night-sweats early. Cough hoarse and hard, voice hoarse or inaudible, distressing laryngitis. The sputa retain the crude character of the mucous sputa of acute bronchitis. Spleen somewhat enlarged.

The hectic is of ^a *continued* type; temperature always above normal, but not much higher in the evening than in the morning; *i. e.*, the remissions *not* well marked; moreover, it resists treatment.

Signs not well marked, not sufficiently so to account for the symptoms. Solidification not extensive. Expansion unequal.

THE DIAGNOSIS OF INCIPIENT PHTHISIS.

There is no absolutely sure symptom of phthisis previous to percussion dullness, but a very strong presumption of its approach can be drawn from the presence of the following changes:

1. *Emaciation.* Where there is progressive emaciation without assignable cause, and especially if the appetite continues good, phthisis should always be suspected. The loss of flesh first shows itself in a retraction of the skin over the cheeks, a thinning of the lips and ears, and a pinched appearance of the nose. The nostril on the affected side is usually slightly more dilated than the other.

2. *Anæmia*, seen in the bluish hue of the sclerotic, and in the pallor of the cheeks.

3. *Sore throat* and hoarseness. A very early symptom. On examination the pillars of the fauces are found hyperæmic, the throat congested and the bronchial glands enlarged.

4. *Depression of the acromial end of the clavicle*, on the affected side. In health the acromial end is slightly higher than the sternal end.

5. *Rheumatoid pains* in the arms coming suddenly at night or in the early morning not increased on moving the arms.

6. *Pityriasis versicolor*, in the form of pale yellow or reddish spots appearing on the skin of the chest, neck and arms. This is considered by AUFRECHT a very characteristic symptom.

7. In regard to the *breathing*, what is considered as suspicious are weak, jerking, "cogged wheel" or sonorous sounds, rough breathing, a lengthened strong expiration after soft inspiration, especially when in circumscribed regions these sounds differ from those on the other side of the chest. The most appropriate spot to note the duration of expiration is over the larynx or trachea; and in proportion as the tubercular deposit is more extended, the expiratory murmur becomes more tubercular in quality and higher in pitch. (ARMOR.) In normal cases the respiratory sound becomes weaker in the supra-spinous region outward from the vertical column. Dr. HEITLER considers it therefore strong evidence of incipient pulmonary phthisis if the respiratory sounds during expiration are more sonorous over these regions than nearer to the vertebral column.*

* DOBELL'S *Report on Diseases of the Chest*. 1877.

8. *Unequal expansion of chest* is an early sign of commencing disease of the apex. The expansion is less on the diseased side.

9. *Alterations in temperature curve* frequently take place early. The temperature may be low, but its characteristic range will be: (1) a marked rise after 2 P. M.; (2) a rapid fall after 10 P. M.; (3) minimum about 7 A. M.; (4) recovery to normal about 10 A. M. (C. T. WILLIAMS.) Such a curve must always excite grave suspicions.

10. *Rapidity of pulse.* A persistent and sustained increase in the pulse rate, without cardiac disease, is a valuable rational sign, present very early in most cases.

11. The *cough* of incipient phthisis is usually short, hacking, and dry, or with a slight, glairy, mucous expectoration only. From the presence of fragments of the pulmonary fibrous tissue in the sputum, "we are sometimes enabled to suspect the existence of consumption before the physical signs of even its early stages are well defined." (DA COSTA.)

12. *Hæmoptysis.* The appearance of hæmoptysis is always a serious element of diagnosis. Light, frothy, red blood, rising without apparent exertion, is an indication which, in America at least, has proved of graver meaning the more it has been investigated.* On the other hand, there may be considerable hæmoptysis, with marked dullness at the apex, without the significance of tubercle.†

13. *Clubbing of the finger ends*, when associated with incurvation of the sides and tips of the nails, means obstruction of the subclavian veins, which is one of the earliest effects of tuberculosis; but clubbing without this incurvation is rather against the probability of tubercle. (DOBELL).

14. *Amennorrhœa* is, in young females, often one of the earliest signs of phthisis.

15. A *red line* is occasionally noticed on the gums at the base of the teeth.

16. *Arthritis.* M. LAVERAN‡ has drawn attention to the occurrence of arthritis as the first symptom of a general tuberculosis.

* See second *Report of the New York Mutual Life Insurance Company*, 1877.

† See Dr. J. M. DA COSTA, in *Medical and Surgical Reporter*, July 13, 1878.

‡ *Le Progres Medical*, Oct. 25, 1876. Quoted by Dr. M. ANDERSON.

To examine sputa for elastic fibres, mix it with a soda solution :

R.	Liquor sodæ,	1 part	
	Aquæ destill.,	2 parts.	M.

And boil for four or five minutes. Then dilute with an equal quantity of distilled water, and pour into a flat porcelain vessel. The particles suspended in the water may then be taken out and examined under the microscope. The fibres in this process are brown, slightly reticulated, and a fraction of a millimetre in length. (SOKOŁOWSKI.)

DIAGNOSIS BETWEEN INCIPIENT PHTHISIS AND BRONCHITIS.

INCIPIENT PHTHISIS.

1. The cough commences gradually, without marked disturbance or coryza, often preceded by slight loss of flesh and strength.

2. The cough is generally dry and hacking at commencement, followed by the expectoration of a thin mucous fluid, which soon becomes thick and opaque, or is slightly streaked with blood.

3. Examination by the microscope shows portions of lung tissue (yellow elastic fibres) in the sputa

4. Pain of a wandering character about the chest, especially under the clavicles or between the shoulders.

5. Evening rise of temperature.

6. The morbid physical signs usually confined to upper lobe of one side; are very persistent, and if on both sides at first, apt to subside on one and increase on the other.

7. Family history and general appearance indicate tuberculous cachexia. Most frequent in youth.

BRONCHITIS.

1. The cough commences suddenly, and is usually ushered in by feverishness and coryza.

2. The cough is accompanied with expectoration almost from the first; generally abundant; frothy or mucopurulent; not often blood-stained.

3. No evidence of destruction of lung tissue.

4. A feeling of tightness and rawness behind the sternum, aggravated by coughing.

5. Elevation of temperature not particularly marked toward evening.

6. Morbid signs usually predominate in the lower lobes; are on both sides; are of temporary duration, and subside gradually and equally on both sides.

7. No marked hereditary tendency; common at all ages.

The general clinical history of phthisis may be summed up in the following brief table:

PHTHISIS.

<i>Stage of the Disease.</i>	<i>Symptoms.</i>	<i>Physical Signs.</i>
1st stage (incipient).	Cough at first dry, then with expectoration of mucus, frequently streaked or dotted with blood, or with copious hæmoptysis. Dyspnœa. Pains in various parts of the chest, especially on the affected side. Dislike to fatty articles, and other dyspeptic symptoms; tendency to vomiting after paroxysms of coughing. Night-sweats. Emaciation. In females, disturbance of the catamenial functions. Occasionally hectic.	Diminished movements. Increased vocal fremitus. Loss of resonance, rise in pitch, or a boxy, wooden note beneath the clavicle or in the interscapular region. Feeble, coarse, or interrupted vesicular murmur, with prolonged expiration. Increased vocal resonance. Occasional sibilus or creaking friction sound. Heart sounds abnormally loud over affected side. Subclavian murmur. Puerile respiration on sound side.
2d stage (confirmed).	Cough more severe, with puriform expectoration, of a yellow or greenish hue, and often bloody. Profuse night-sweats and rapidly progressive emaciation. Pinched and anxious expression. Loss of appetite. Thirst. Diarrhœa. Sometimes hectic.	Greater diminution of movement of the affected side, and some amount of flattening. Increased vocal fremitus. Increased dullness, extending downwards. Bronchial breathing, mixed with mucous râles or with click at the end of each inspiration. Bronchophony.
3d stage (advanced).	Cough rather looser, still with puriform (nummular) expectoration, or attacks of copious hæmoptysis. Extreme emaciation and debility, with or without night-sweats. Voice husky and hollow. Aphthæ on mouth and fauces. Hectic. Clubbed nails.	Scarcely any movement of the affected side. Marked flattening. Increased vocal fremitus. Dullness less marked. Box-like resonance of cracked-pot sound. Cavernous breathing, with gurgling and splash on cough. Occasionally metallic sounds. Pectoriloquy.

PHTHISIS.

Complications not restricted to any particular stage of phthisis.	The chief of these are : Affections of the larynx and trachea, especially ulceration ; bronchitis, pneumonia, or pleurisy ; perforation of the pleura, with pneumothorax ; enlargement of the external absorbent glands, or of those in the chest and abdomen ; tubercular peritonitis ; ulceration of the intestines, especially the ileum ; fatty or amyloid liver ; fistula in ano ; various forms of Bright's disease ; diabetes ; pyelitis ; tubercular meningitis, or tubercle in the brain, and thrombosis of the veins of the legs.
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POST MORTEM APPEARANCES.

First stage. Usually most marked at, or even confined to, one apex, where are to be seen gray, semi-transparent nodules, varying in size from a small pin's head to a hemp-seed; the lung-tissue around these nodules may be healthy, but is generally hyperæmic and congested, slightly increased in density. In more advanced cases, in addition to the miliary nodules, there may be small yellow masses, less defined, but larger than the gray variety. Both kinds may either be scattered or several in one group, forming a considerable mass.

Second stage. Commencement of caseation and softening in the consolidated portion, inflammation of the surrounding parenchyma, together with obliteration of the blood-vessels and formation of cicatricial tissue.

Third stage. Cavities of various sizes and forms, and either single or numerous, generally containing puriform fluid. Ulceration and dilation of the bronchial tubes. Lung indurated and puckered in proportion to chronicity of disease.

ACUTE PHTHISIS, ACUTE MILIARY TUBERCULOSIS, GALLOPING CONSUMPTION, TYPHOID PHTHISIS.

The formidable disease known under these names is probably, as M. BOUCHUT remarks, more common than is generally supposed, as it is generally mistaken either for capillary bronchitis or typhoid fever, especially the latter. Its duration is brief, sometimes less than a fortnight (DA COSTA), and its termination almost invariably fatal.

Its onset is marked by chills and feverishness, nausea, vomiting and diarrhea. There is a rapid pulse; dyspnea; pain in the chest; cough, usually with profuse expectoration. Great exhaustion, profuse sweats, rapid emaciation, and delirium, soon follow. One or both lungs exhibit unusual dullness, while the auscultatory sounds differ greatly in different cases.

The following are the marked diagnostic features of the disease :

1. *Facial expression.* The countenance is livid, indicating plainly an impediment to the passage of blood through the lungs. In severe typhoid fever the cheeks are slightly flushed, the facial muscles tremulous, the eyes dull, and the mouth partly opened, presenting an appearance characteristic of the disease.*

2. *The delirium* of acute phthisis is restless and often violent, but the rambling and wild talk is connected usually with things present or near. In typhoid fever the delirium is generally muttering and low; the mind deals with things absent, and the patient "is like a man talking in his dreams." (WATSON.)

3. *The tongue* in acute phthisis, at first covered with a white fur, soon becomes red, glassy and dry. In typhoid it usually changes to a brownish hue.

4. *The ophthalmoscope* is a most positive aid to the diagnosis, according to M. BOUCHUT. In all cases of acute, general, miliary tuberculosis, an ophthalmoscopic examination will reveal the presence of tubercular granulations in the choroid,† thus placing the nature of the disease beyond doubt.

4. *Abdominal symptoms.* Diarrhœa and gastric and abdominal pains are often present in acute phthisis; but the red spots of typhoid are not seen.

5. *Chest symptoms.* Dyspnea is present always, but the orthopnea of capillary bronchitis is rare (SHAW). The respiration is greatly quickened, and the proportion to the pulse averages 1 : 3 (WALSHE). The presence of percussion dullness, a sinking in at the upper part of the chest, and the occurrence of hemorrhage, are conclusive evidence of tubercle (DA COSTA).

* L. J. WOOLLEN, *American Practitioner*, July, 1871.

† *Medical Times and Gazette*. January, 1875.

DIAGNOSIS OF SYPHILITIC PHTHISIS.

The distinctive traits of this form of consumption have lately been separately studied by Dr. MACSWINEY, of Dublin, and Dr. PENTIMALLI, of Naples. Their results are combined in the following schema:

1. Absence of hereditary tendency, of a phthysical habitus, and of preceding pulmonary affections.
2. History of syphilitic disease in other organs, and presence of the syphilitic cachexia in its tertiary stage.
3. The disease never begins in the apex, and is limited in its seat, being unilateral and generally posterior (PENTIMALLI).
4. Hæmoptysis rare, febrile symptoms absent or slight.
5. Slowness in development, the acuter phthysical symptoms not manifest.
6. Exacerbation of pain during the night.
7. A peculiarly fetid breath.
8. Reference of the feeling of oppression to the larynx rather than to the chest.
9. Failure of ordinary measures, and improvement under specific medication.

BRONCHITIS, ACUTE AND CHRONIC.

In most cases of bronchitis the inflammation is seated in the larger bronchial tubes. There is more or less swelling of their lining mucous membrane, not generally sufficient to prevent a free passage to the breathing air. The character of its acute and chronic form are as follows:

ACUTE BRONCHITIS.

	<i>Symptoms.</i>	<i>Physical Signs.</i>
1st or Dry Stage.	Chilliness, followed by frequent pulse and febrile symptoms; pains in limbs. Substernal pain. Hoarse dry cough. Feeling of oppression and tightness about the chest.	Breathing hurried. Rhonchal fremitus may be felt. Resonance on percussion unimpaired. Feeble vesicular murmur, mixed with rhonchus and sibilus. Puerile breathing in unobstructed parts of lung. Vocal resonance not materially altered.

	<i>Symptoms.</i>	<i>Physical Signs.</i>
2d or Moist Stage.	Cough, with expectoration of frothy, transparent mucus, mixed with air-bubbles of various sizes, and occasionally tinged or streaked with blood. Urgent dyspnœa, often amounting to orthopnœa. Lividity and febrile symptoms increased. Restlessness at night.	Breathing hurried. Rhonchal fremitus may be felt. Resonance on percussion clear or only very slightly impaired. Feeble vesicular murmur mixed with rhonchus, sibilus and mucous râles. Vocal resonance unaltered.
3d Stage. (Termination favorable)	Gradual remission of the symptoms. Expectoration becomes thick, greenish, and opaque, and sometimes nummulated.	Less amount of sonoro-sibilant and mucous râles, with return of normal vesicular breathing.
(Unfavorable.)	Dyspnœa very urgent, signs of impending suffocation. Profuse cold sweats. Sinking, drowsiness and delirium. Less cough, absence of expectoration.	In addition to the signs of the second stage, tracheal râles may be heard.

The *post mortem* appearances are: Congestion of mucous membrane of bronchial tubes, with some degree of swelling and dryness of surface.

Lungs do not collapse when the chest is opened. The mucous membrane of the bronchi is red and swollen, and the tubes filled with frothy, adhesive mucus.

CHRONIC BRONCHITIS.

Symptoms.

Two chief forms, the one characterized by the sputa being expectorated with great difficulty, consisting of small, grey, semi-transparent pellets, and tending towards emphysema; in the other the sputa are abundant, muco-purulent, and brought up with ease; dilatation of the bronchi frequently associ-

Physical Signs.

Respiration labored and abdominal. Vocal fremitus not materially altered; rhonchal fremitus can generally be felt. Impairment of resonance or a hyper-resonant note, according as collapse of lung and consolidation or emphysema predominate, the former most marked at the bases, the latter at the an-

ated with this form. The cough generally comes on at the approach of winter; with the history of former attacks. Dyspnœa; lividity of surface; and in some cases the symptoms resemble those of chronic phthisis, as wasting, with night sweats and hectic.

terior part. Feeble vesicular murmur. Rhonchus, sibilus, and mucous râles. Vocal resonance varies.

The *post mortem* appearances are:

Lungs generally much congested, presenting a dark livid hue, with portions collapsed, and others emphysematous. Bronchial tubes frequently dilated. Mucous membrane thickened, uneven, sometimes ulcerated, covered by a thick, puriform secretion, or sparingly coated by a tenacious, glairy, semi-transparent substance.

The principal diseases with which bronchitis may be confounded are pneumonia, pleurisy and phthisis. But each of these is characterized by the presence of definite physical signs, which are not to be found in ordinary bronchitis. For instance, in this disease there is no disparity between the two sides of the chest in the resonance obtained by percussion, nor in vocal resonance, the bronchial whisper and fremitus. The swelling of the bronchial mucous membrane may cause some diminution of the intensity of the vesicular murmur; but as the affection is bilateral and the bronchial tubes on both sides are affected equally, both in degree and extent, there is no appreciable disparity between the two sides. Sometimes temporary weakening or suppression of the murmur may be caused by a plug of mucus, which will be detected on a second examination (FLINT).

CAPILLARY BRONCHITIS.

Acute capillary bronchitis may, however, be taken for some of the forms of pneumonia, and in fact the descriptions of some writers would lead to the belief that they have committed this error. The following distinctions will make the diagnosis easy in most cases:

CAPILLARY BRONCHITIS.

Commences in the external air passages as a common cold and extends downward.

Always bilateral.

Normal or exaggerated resonance on percussion unless collapse has commenced.

Sub-crepitant râles on both sides of the chest.

Respiration not bronchial, 50 or more; pulse 150 or more.

Muco-purulent expectoration; no plastic lymph.

Dyspnœa intense; cyanosis early. No pain or but little.

Death from asphyxia; mortality more than half.

PNEUMONIA.

Commences suddenly with a chill, and attacks the lungs directly.

Generally unilateral.

Dullness on percussion more or less extensive at the outset.

Crepitant râle.

Respiration bronchial, 25 to 40 per minute. Pulse 100 to 130.

Rust-colored expectoration; plastic lymph.

Dyspnœa less; cyanosis late if at all. Pain in the side.

Death from asthenia; mortality ten per cent.

PNEUMONIA AND PLEURISY.

Ordinary acute inflammation of the lungs in its early or first stage is well marked by the presence of a moderate or slight dullness on percussion over the affected lobe, and the detection on auscultation of the *crepitant* râle. The latter is indeed not invariably present, but when it is, taken in connection with the symptoms, it is pathognomonic.

When the inflammation is of the pleural surfaces of the lungs—in other words, acute pleurisy—the marked characters are a sharp pain in the side, and consequent feeble respiratory murmur from restrained respiration, and a rubbing *friction sound*.

Later in the diseases the rust-colored expectoration of pneumonia on the one hand, and the physical signs of effused liquid into the pleural cavity in pleurisy on the other hand, offer distinctive features.

The general clinical histories of the diseases are given in the following tables:

PNEUMONIA.

	<i>Symptoms.</i>	<i>Physical Signs.</i>
1st Stage. (Engorgement.)	Single, severe rigor (or convulsions in children), followed by heat of skin. Increased frequency of pulse. Respiration greatly accelerated, with consequent disturbance of the pulse-respiration ratio. Dyspnoea. Pain in the side, increased by cough or deep inspiration. Cough, at first dry, with rusty sputa about the second or third day. Inability to lie on affected side. Dilating alæ nasi. Herpes about lips. Frontal headache.	Diminished movement on the affected side. Respiration abdominal. Vocal fremitus normal. Percussion note not materially affected. Feeble vesicular breathing. Fine crepitant râle, most frequently heard at base of lung and at the end of inspiration.
2d Stage. (Red hepatization.)	Increased distress and dyspnoea. Respiration and speech panting. Cough more urgent, and sputa still rust-colored, extremely viscid, and tenacious. Absence or deficiency of chlorides in the urine.	Very slight movement. Vocal vibrations well marked. Dullness on percussion. Tubular breathing and bronchophony, generally accompanied by some râles, if at the commencement of the 2d stage of a crepitant character, and afterwards of a mucous nature.
3d Stage. (Gray hepatization.)	Aspect much distressed. Face pale and livid. Great failure of vital powers. Hectic and delirium. Cough continues, and the sputa are either absent, or sometimes they remain rust-colored; at others become purulent or dark, like prune-juice, thin and fetid.	Absolute dullness on percussion. Tubular breathing and bronchophony, frequently with gurgling râles where the lung is disorganized.

POST-MORTEM APPEARANCES.—*Lungs*: 1st stage. Engorged with frothy and bloody serum. Dark-red color externally, and on section. Crepitating less and heavier than sound lung, but still floating in water. Pulmonary tissue slightly softened.

2d. Red externally, red or mottled and granular on cut surface, and of liver-like solidity. Easily torn, and with fluid exuding on pressure

less abundant than in first stage, but thicker, and towards the end of this stage becoming purulent. Not crepitating, and sinking in water.

3d. Reddish yellow or gray. More rotten and friable. Purulent fluid exudes from the cut surface; and, on pressure, the whole lung may be reduced to a pulp-like mass.

PLEURISY.

	<i>Symptoms.</i>	<i>Physical signs.</i>
PLEURISY : 1st Stage, or Stage of Hy- peræmia.	Rigors, or more frequently more chilliness. Sharp, stabbing pain in the side, increased by deep inspiration or cough, accompanied generally with some tenderness on pressure. Breathing short and hurried. Respiration chiefly abdominal, with inability to lie on the affected side. Short, dry cough. Pulse full and bounding. Febrile symptoms.	Diminished movement on the affected side. Friction, fremitus may sometimes be felt. Percussion sound not materially altered. Vesicular murmur feeble and jerking in rhythm. To-and-fro friction sound.
2d Stage, or Stage of Effu- sion.	Cough, dyspnoea, sense of weight and fulness of the affected side. Febrile symptoms less marked. Patient lies toward, not on, the affected side. Complexion inclined to be dusky.	Almost total absence of movement of the affected side, which is unduly prominent, the intercostal spaces being obliterated or even bulging. Integuments occasionally oedematous. Vocal vibrations absent. Complete dullness on percussion, most marked in the dependent portions of the chest, and sometimes altered by change of posture. Heart pushed over to sound side, and diaphragm pushed down, so that the liver and stomach descend lower into the abdomen than in health.
(Empyema.)	More decided febrile disturbance of a hectic type, night sweats. Morning remissions and evening exacerbations. Face puffy and semi-transparent. Clubbing of the finger-ends. If pointing inwardly abundant purulent sputa.	Vesicular murmur almost, or quite, absent. Frequently bronchial breathing along the spine. Puerile preathing in sound lung. Voice sounds absent or feeble, except when the layer of fluid is thin, and then there may be oegophony.

	<i>Symptoms.</i>	<i>Physical signs.</i>
3d Stage (Resolution after Effusion).	Gradual diminution of the cough, dyspnoea, and other symptoms. Returning ability of the patient to lie on the sound side. Gradual return of displaced organs to their normal position.	The movement of the chest gradually increases. Return of vocal vibration and friction fremitus. The dullness on percussion diminishes from above downwards, but the resonance generally remains box-like for a considerable period. Gradual restoration of the vesicular murmur, at first weak and distant, then somewhat harsh, and subsequently of a normal character. Reappearance of the friction sound for a time. Pseudo râles occasionally to be heard. Egophony sometimes to be heard, more often bronchophony, and ultimately normal vocal resonance.

POST-MORTEM APPEARANCES.—1st. stage. Pleura opaque and drier than natural, roughened and highly vascular, and presenting a close net-work of blood-vessels with ecchymoses.

2d. Fluid, either serous or purulent, mixed with shreds of creamy lymph, in the cavity of the pleura. Lungs pushed upwards and backwards towards the spine, its surface coated with a layer of lymph of the same kind as that mixed with the fluid. The lung collapsed and carnified.

3d. If the effusion has been of long duration the lung remains carnified and bound down by adhesions, and the chest-wall undergoes retraction or depression, the ribs overlap, and there is more or less lateral curvature of the dorsal spine towards the diseased, and of the lumbar towards the healthy side.

DIAGNOSIS BETWEEN PLEURISY WITH EFFUSION
AND PNEUMONIC CONSOLIDATION.

PLEURISY.

1. Begins with chilliness or several slight rigors.
2. Sharp, catching, stitch-like pain in the side.
3. Cough, dry or with little mucous expectoration, very painful, and repressed by the patient.
4. Pyrexia is not great and the skin may be moist.
5. Excretion of chlorides not affected.
6. Pulse-respiration ratio not affected.
7. Affected side rounded ; displacement of heart.
8. Feeble or absent vocal fremitus.
9. Absolute dullness on percussion, transgressing the median line in front.
10. Feeble or absent vesicular breathing ; bronchial breathing at the root of the lung.
11. Vocal resonance absent, sometimes œgophonic.

PNEUMONIA.

1. Begins with a severe and protracted rigor.
2. Pain does not catch the breath ; is more of a dull character.
3. Cough frequent and severe, with rusty, viscid expectoration.
4. Great febrile disturbance, skin-hot and pungent.
5. Diminution of absence of chlorides in the urine.
6. Pulse-respiration ratio may fall to 2 : 1.
7. No alteration in the shape of the chest or of the intercostal spaces ; heart not displaced.
8. Vocal fremitus usually much intensified.
9. Less intense dullness, not transgressing the median line.
10. Marked tubular breathing, often of a metallic character.
11. Loud broncophony.

DIAGNOSIS BETWEEN PNEUMONIA AND PULMONARY APOPLEXY.

PULMONARY APOPLEXY.	PNEUMONIA.
Nearly always associated with heart disease or pyæmia.	Generally an independent disease.
Onset sudden. Fever absent except in pyæmia. Pulse irregular and intermittent.	Onset with malaise and chill. Fever. Pulse rapid.
Expectoration blackish, with small dark clots.	Expectoration rust-colored; no clots.
Dyspnœa severest at first, afterwards diminishing.	Dyspnœa gradually grows in intensity.
Dullness distinctly circumscribed; respiration bronchial, with moist râles	Dullness larger and extending. Crepitant râle.
A peculiar acid and alliaceous odor to the breath "like the smell of tincture of horse radish." (GUÉNEAU DE MUSSY.)	Not present.

PULMONARY EMBOLISM.

The symptoms of an immediately fatal attack are: Sudden extreme dyspnœa with open tubes, cough and thoracic pain, lividity or pallor, rapidly failing pulse, cold sweats, intense anxiety, and attacks of fainting or unconsciousness, with or without spasms.

In the diagnosis, the suddenness of the conditions being of the chief interest, all those forms of suffocation requiring time for their production may be disregarded, and there remain:

1. Closure of the greater air passages or of a large number of small ones, from without or from within.
2. Nervous lesions, particularly intra-cranial, affecting respiration and circulation.
3. Obstruction to the pulmonary circulation from emboli, of blood and air particularly, fat being more gradual in its effects.

Physical and rational evidence of open air passages eliminate the

first series. In intra-cranial origins of suffocation the predominant early symptoms are those of cerebral anæmia, namely, pallor, relaxed muscles, disturbed hearing and vision, contracted pupils, fainting and convulsions. Dyspnœa may sometimes precede these symptoms, but it is not of so severe a character as in the other series.

In favor of the third is the history of an antecedent thrombus, or of a disease of the heart likely to be associated with thrombosis.

ASTHMA.

Symptoms.

There may be premonitory symptoms such as gradually increasing dyspnœa or the passing of a large quantity of limpid urine; but the attacks usually come on suddenly at an early hour in the morning; the patient awakes in a start, with a sensation of suffocation and oppressiveness at the chest; he either sits upright in bed, or sometimes stands holding on to a piece of furniture, so as to bring into play the accessory muscles of respiration. Countenance pale and anxious; in bad cases cyanotic. Skin covered with sweat; extremities cold. Pulse frequently feeble. The attacks generally terminate with the expulsion of tough, ashy grey pellets of mucus.

Physical Signs.

Chest greatly distended, though there is scarcely any expansive movement. Recussion of the intercostal spaces, supra-sternal and supra-clavicular fossæ and epigastrium during inspiration, which is short and jerky, while expiration is prolonged and wheezing. Vocal vibration not markedly affected. Rhonchal fremitus may be felt. Resonance on percussion increased all over the chest. Almost complete absence of vesicular murmur. Every variety and kind of sibilus and rhonchus, whistling, squeaking, cooing, snoring sounds, and occasionally mucous râles towards the termination.

POST-MORTEM APPEARANCES.—The appearances found after death are principally the result of chronic bronchitis and emphysema, with dilatation of the right side of the heart.

PNEUMOTHORAX.

This condition is generally found with serous effusions—pneumo-hydrothorax; but occasionally presents itself as an independent affection. The characteristics of the two forms are as follows:

	<i>Pneumothorax.</i>	<i>Pneumo-hydrothorax.</i>
Symptoms.	Generally sharp, stabbing pain, with the sensation of something having given way. Urgent dyspnœa and evidences of shock. More or less cyanosis. Posture assumed by patient varies. Pulse frequent, weak, and small. Respiration may be 40 to 60 in the minute. Troublesome cough without expectoration. In some cases of phthisis, or where there are extensive pleural adhesions, pneumothorax has come on quite imperceptibly, and has only been discovered by physical examination.	Symptoms as opposite, except that the cough is usually attended by fetid, puriform expectoration. The patient lies on or towards the affected side.
Physical Signs.	Dilatation of the affected side, with obliteration or bulging of the intercostal spaces. Movement on respiration diminished or absent. Increased elasticity of the walls of the chest. Feeble or absent vocal fremitus. Clear tympanic resonance on percussion. If the amount of air is extreme there may be dullness. No true vesicular murmur; bronchial breathing may be heard along the spine. Amphoric sounds, with inspiration, voice, and cough, also a metallic echo; the bell-sound may be elicited. The viscera are displaced to a variable degree.	Same as in true pneumothorax, except that percussion is dull in the lower part of the chest, and tympanic above the level of the fluid. Metallic tinkling and splashing sound on succussion are also frequently heard.

	<i>Pneumothorax.</i>	<i>Pneumo-hydrothorax.</i>
Post mortem appearance.	Lung collapsed, lying near vertebral column, unless bound down to old adhesions to some other part of the chest wall. The gas is composed chiefly of carbonic acid and nitrogen, and contains but little oxygen, and occasionally some sulphureted hydrogen.	Lung collapsed. Air, mixed with fluid, in pleural cavity. Mostly arises as a termination of phthisis, a superficial cavity becoming ruptured. May occur in pneumonia, emphysema, or gangrene of the lung, and more rarely in other diseases.

EMPHYSEMA.

This affection presents itself in two forms, the vesicular and the interlobular, which are distinguished as follows :

	<i>Vesicular Emphysema.</i>	<i>Interlobular Emphysema.</i>
Symptoms.	Habitual shortness of breath, with occasional paroxysms of urgent dyspnœa, most frequently supervening on catarrh. Cough, with or without expectoration of thin, transparent, frothy mucus. In the last stage of the disease there are symptoms due to interference with the circulation, as palpitation, cyanosis, general dropsy, and congestion of the abdominal viscera.	Urgent dyspnœa and oppression, generally occurring suddenly after some violent effort, the subcutaneous areolar tissue frequently becoming œdematous

	<i>Vesicular Emphysema.</i>	<i>Interlobular Emphysema.</i>
Physical signs.	Chest "barrel-shaped" and almost circular. Sternum projecting forward. Scapulae and clavicles raised and ill-defined. Ribs more horizontal and intercostal spaces widened. Respiration abdominal. Movement of chest much diminished. Heart beating in the epigastric region. Resonance on percussion greatly increased or tympanitic. Feeble inspiration, prolonged expiration, the former wheezing, the latter generally with rhonchus or sibilus. Vocal fremitus and resonance usually deficient.	Percussion tympanitic over the affected part.
Post mortem appearance.	Lung does not collapse as usual when the chest is opened, but, on the contrary, may rise up and bulge out of its cavity. It is pale and anæmic, and does not crepitate when pressed, but feels soft and downy, and is drier than ordinary. The air-cells are dilated, or several have become one cavity from the rupture of the septa between them. Cells vary from the size of a millet-seed to that of a swan-shot or larger.	Bead-like bubbles of air seen through the pleura, or partitions between the lobules much widened. Sometimes air is found beneath the areolar tissue of the neck.

CANCER OF THE LUNG.

The principal obstacle in recognizing this disease is the liability to confound it when primary and unilateral (as it usually is when primary) with phthisis. Similar cough, emaciation, hæmoptysis, night sweats, etc., occur in both. The points of difference are:

PULMONARY CANCER.

Sides of chest more markedly asymmetrical; the tumor may bulge through the intercostal spaces.

Percussion dullness very great; may extend beyond median line.

Frequent changes in the signs of auscultation, râles, bruits, etc.

Hæmoptoic sputa, "resembling currant jelly."

Pain constant, severe, lancinating.

Cancerous cachexia, tinge of skin, etc.

PHTHISIS.

One side may be sunken; never bulging.

Percussion dullness moderate; never extends beyond median line.

Changes much more gradual.

Sputa never present this appearance.

Pain variable, intermittent.

Absent.

Pulmonary cancer is sometimes so masked, that its diagnosis requires the closest attention. It may be present without the characteristic sputa, without cachexia, and even without pain at cancerous spot.* Such instances are, of course, very rare.

It is liable to be mistaken for *chronic pleurisy*, or *vice versa*. The distinguishing features are, that in cancer there is an absence of the complete consolidation of chronic pleurisy; the consolidation of the latter is at the lower portion of the lung; the expectoration of cancer is quite different from that of pleurisy and bronchitis; and the previous history, both of the individual and his family, in cancer points to this disease, while chronic pleurisy has as an antecedent an acute attack.

* See case recorded in the *Boston Med. and Surg. Journal*, Jan., 1876.

The deposits of gummatous nodules in the lungs consequent on *secondary syphilis*, together with the cachexia attendant on that disease, may stimulate a cancerous deposit. The history of the case, the presence of syphilitic signs in other organs and tissues, and the fact that cancers tend to spread and infiltrate the surrounding tissue, while the syphilitic nodule remains isolated and circumscribed, are the distinctive points.

CHAPTER III.

DISEASES

OF

THE CIRCULATORY SYSTEM.

CONTENTS.—*The Præcordial Regions. Normal Sounds and Impulse of the Heart. Endocardial Murmurs. General Rules for the Diagnosis of Heart Disease. Constitutional Symptoms of Heart Disease. Clubbing of the Fingers. Differential Signs Between Anæmic and Organic Blood Murmurs. Pain at and near the Heart. Aphorisms Regarding Angina Pectoris. Differential Signs of Aortic Obstruction and Aortic Incompetency; of Mitral Obstruction and Mitral Incompetency; of Pulmonary Obstruction and Tricuspid Regurgitation. Pericarditis. Diagnosis Between Acute Endocardial and Exocardial Sounds; Between Cardiac Dilatation and Pericarditis with Effusion; Between Simple Hypertrophy, Hypertrophy with Dilatation, and Simple Dilatation. Fatty Degeneration of the Heart.*

The anatomical positions of the various members of the heart are as follows :

THE PRÆCORDIAL REGIONS.

<i>Region.</i>	<i>Situation.</i>
APEX OF HEART.	Between fifth and six ribs on left side, about two inches below the nipple and one inch on its sternal side.
BASE OF HEART.	On a level with the third costal cartilages.
TRICUSPID ORIFICE.	Extends from the junction of the fourth left costal cartilage with the sternum, behind that bone to the articulation of it with the sixth right cartilage.

<i>Region.</i>	<i>Situation.</i>
MITRAL ORIFICE.	To the left of the tricuspid valves, immediately behind the fourth costal cartilage.
PULMONARY ORIFICE.	Immediately behind the left border of the sternum at the junction of the third costal cartilage with that bone.
AORTIC ORIFICE.	About half an inch lower than and to the right of the pulmonary orifice, behind the sternum, on a level with the third inter-space.

Let it be remembered that the tricuspid orifice is the most superficial, then the pulmonary, next the aortic, and deepest of all is the mitral orifice. Ranged from above downwards, the pulmonary orifice comes first, then the aortic, then the mitral, and lastly the tricuspid.

PHYSICAL EXAMINATION OF PRÆCORDIAL REGION.

<i>Examination by</i>	<i>Shows.</i>
INSPECTION.	Form of chest. Point at which the apex of the heart strikes the wall of the chest. Regularity of impulse, and extent over which it is perceptible.
PALPATION.	Force and regularity of impulse. Presence or absence of purring tremor or of friction fremitus.
PERCUSSION.	Extent and intensity of præcordial dullness.
AUSCULTATION.	Character of rhythm. " sounds, normal or abnormal.

THE AREA OF SUPERFICIAL CARDIAC DULLNESS

Is roughly triangular in shape, the right side of the triangle being the midsternal line from the level of the fourth chondro-sternal articulation downwards; the hypotenuse being a line drawn from the same articulation to a point immediately above the apex-beat; the base being a line drawn from immediately below the apex-beat to the point

of meeting between the upper limit of liver dullness and the mid-sternal line (Dr. GEE).

NORMAL SOUNDS AND IMPULSE OF HEART.

<i>Sound.</i>	<i>Character.</i>	<i>Point of greater intensity.</i>	<i>Cause.</i>	<i>Time.</i>	<i>Condition of circulation.</i>
FIRST SOUND (Systolic).	Dull and prolonged.	Fourth and fifth intercostal spaces just within left nipple line.	Closure of auriculo-ventricular valves, and, perhaps, muscular contraction of the ventricles themselves.	$\frac{4}{10}$	Contraction of ventricles, dilatation of auricles. Closure of auriculo-ventricular valves, openness of arterial valves; propulsion of blood into the arteries. Impulse of the heart immediately followed by pulse at the wrist.
FIRST PAUSE	..	..	..	$\frac{1}{10}$	Auricles dilating.
SECOND SOUND (Diastolic).	Short and clear.	Base of heart, opposite the third costal cartilage.	Sudden closure of the aortic and pulmonary valves.	$\frac{2}{10}$	Dilatation of both auricles and ventricles. Closure of arterial valves, opening of auriculo-ventricular valves.
SECOND PAUSE.	..	..	..	$\frac{3}{10}$	Complete distension of auricles, followed by their contraction, and distension of ventricles. Auriculo-ventricular valves open, arterial valves closed.
IMPULSE.	..	Between fifth and sixth ribs on left side, about one and a half or two inches below the nipple.	In part due to the tilting upwards of the apex, but chiefly to the change in shape of the heart, which during the systole becomes harder and more globular, and bulges forwards.		

ENDOCARDIAL MURMURS.

<i>Time.</i>		<i>Situation.</i>	<i>Orifice.</i>	<i>Nature.</i>
SYSTOLIC	1 .	Basic.	Aortic.	Obstructive.
	2 .	"	Pulmonary.	"
	3 .	Apical.	Mitral.	Regurgitant.
	4 .	"	Tricuspid.	"
DIASTOLIC	1 .	Basic.	Aortic.	"
PRESYSTOLIC	1 .	Apical.	Mitral.	Obstructive.

Pulmonary regurgitant murmur (diastolic) and tricuspid obstructive murmur (presystolic) are very rarely met with clinically, and for all practical purposes they may be disregarded.

The most frequent combinations of these murmurs are:

1. Combined aortic obstruction with regurgitation.
2. Mitral obstruction and regurgitation.
3. Various combinations of the two preceding forms, the aortic and mitral valves being both diseased.
4. Mitral obstruction with dilated right ventricle, and consequently tricuspid regurgitation (Dr. AITKEN).

Order of frequency of endocardial murmurs, commencing with the most common:

- | | |
|-------------------------|----------------------------|
| 1. Mitral regurgitant. | 5. Tricuspid regurgitant. |
| 2. Aortic constrictive. | 6. Pulmonary constrictive. |
| 3. Aortic regurgitant. | 7. Pulmonary regurgitant. |
| 4. Mitral constrictive. | 8. Tricuspid constrictive. |

Order of relative gravity as "estimated not only by their ultimate lethal tendency, but by the amount of complicated miseries they inflict."—Dr. WALSH.

1. Tricuspid regurgitation.
2. Mitral constriction and regurgitation.
3. Aortic regurgitation.
4. Pulmonary constriction.
5. Aortic constriction.

GENERAL RULES FOR THE DIAGNOSIS OF HEART DISEASE.

DR. JOHN HUGHES BENNETT* gives the following rules :

1. In health the cardiac dullness, on percussion, measures, immediately below the nipple, two inches across, and the extent of dullness beyond this measurement commonly indicates either the increased size of the organ or undue distension of the pericardium.

2. In health the apex of the heart may be felt and seen to strike the chest between the fifth and sixth ribs, a little below and a little to the inside of the left nipple. Any variations that may exist in the position of the apex are indications of disease either of the heart itself or of the parts around it.

3. A friction murmur synchronous with the heart's movements, indicates pericardial or ex-pericardial exudation.

4. A bellows murmur with the first sound, heard loudest over the apex, indicates mitral insufficiency.

5. A bellows murmur with the second sound, heard loudest at the base, indicates aortic insufficiency.

6. A bellows murmur with the second sound heard at the apex is rare. It indicates—1st, Aortic disease, the murmur being propagated downwards to the apex; or, 2d. Roughened auricular surface of the mitral valves; or 3d, Mitral obstruction.

7. A murmur with the first sound, loudest at the base, and propagated in the direction of the large arteries, is more common. It indicates—1st, an altered condition of the blood, as in anemia; or 2d, Dilatation or disease of the aorta itself; or 3d, Stricture of the aortic orifice, or disease of the aortic valve.

8. Hypertrophy of the heart may exist independent of any valvular lesion, but this is rare.

9. The pulse as a general rule is soft and irregular in mitral disease, but hard, jerking, or regular in aortic disease.

10. Cerebral symptoms are more marked in aortic disease: pulmonary symptoms in mitral disease.

Various constitutional symptoms should, in default of other obvi-

**Lectures on the Principles and Practice of Medicine.*

ous causation, lead to the suspicion of disease of the heart. These are mainly :

1. *Symptoms referred to the circulation.* Violent, continued *pulsation* may arise from cardiac hypertrophy, and especially aortic regurgitation. *Cyanosis*, blueness of the lips, coldness of the finger-tips, etc., are common in many cardiac cases. *Dropsy* is a late and dangerous symptom.

2. *Symptoms referred to the Lungs.* These are frequent cardiac complications, especially dyspnœa, orthopnœa, and cough.

3. *Symptoms referred to the Brain.* Vertigo, languor, chorea, epilepsy, apoplexy and paralysis may all be brought about by heart disease. In sudden cerebral attacks in patients suffering with valvular disease, *embolism* is often at work.

4. *Stomach Symptoms.* Dyspepsia and hemorrhoids may find their origin in cardiac lesions.

5. *Throat Symptoms.* Pain in the throat is complained of in angina ; hoarseness and aphonia sometimes signify pericarditis.

6. *Renal Symptoms* may follow heart disease. In all cases of cardiac disease the urine should be tested for albumen, as this condition may excite cardiac symptoms.

CLUBBING OF THE FINGER ENDS IN CHRONIC HEART DISEASE AND PHTHISIS.

The following aphorisms on this point are laid down by Dr. HORACE DOBELL.*

Aphorism I. Clubbing of the finger-ends on one or both sides of the body, with or without incurvations of the nails, may occur whenever the return of blood by one or both subclavian veins is seriously obstructed for a considerable length of time.

II. Symmetrical clubbing of the finger-ends of both hands without incurvation of the sides and tips of the nails, is presumptive evidence of the existence of heart disease.

III. Clubbing of the finger ends without incurvature of the sides and tips of the nails, is presumptive evidence *against* the existence of phthisis.

**Affections of the Heart.* London, 1876.

IV. Symmetrical clubbing of the finger-ends conjoined with incurvation of the sides and tips of the nails, is a sign that obstruction of the return of blood by the subclavian veins and wasting of adipose tissue have co-existed.

DIFFERENTIAL SIGNS BETWEEN ANÆMIC AND ORGANIC CARDIAC SOUNDS.

ANÆMIC SOUNDS.

First sound heard over the right ventricle is *rough*, not distinctly located at apex or base.

Sounds vary in character.

Sounds increase in intensity in following the aorta.

Pressure with the stethoscope increases or develops the sound.

Bruit de diable, a continuous musical hum, can be heard in the hollow above the right clavicle.

Co-existence of pallor or anæmia; amenorrhea; leucorrhœa; nervous exhaustion; chorea; renal disease; phthisis.

ORGANIC SOUNDS.

First sound is soft; is distinctly located at apex or base.

Sound the same after several examinations.

Sounds diminish in intensity in receding from the heart.

Not affected by pressure.

Not present.

Co-existence of alteration in size of the heart; other organic signs; history of rheumatism.

PAIN AT THE HEART.

Pain is by no means a common symptom of heart disease. Not more than one in a dozen cases of chronic organic cardiac disease complain of pain at all.* In acute cardiac affections it is more frequent. In most cases of alleged pain at the heart it is found on examination to proceed from dyspepsia, muscular rheumatism, intercostal neuralgia, enlarged spleen, or the like.

* SANSOM, *Diagnosis of Diseases of the Heart*, p. 3.

DR. HORACE DOBELL'S APHORISMS REGARDING THE
SIGNIFICANCE OF PAIN AT THE HEART AND
IN ITS NEIGHBORHOOD.*

APHORISMS.

I. Pain in the region of the heart and down the left arm does not necessarily indicate heart disease.

II. The conjunction of pain in the region of the heart and pain in the left arm may be a most important symptom of heart disease, and is never to be disregarded.

III. If pain is excited by exercise, taken when the stomach is not distended with food or gas, and especially if it comes on quickly and increases steadily in severity with the continuance of exercise, it is almost certain there is some serious disease of the circulatory organs.

IV. When it is found that flatulence or a full meal embarrasses the heart painfully, a careful investigation should be made into the condition both of the organ itself, and of the blood.

V. Important heart disease may exist, and yet pain at the heart and in its neighborhood be absent.

VI. The appalling import of *pain in the throat* in heart disease increases in proportion as the period of its onset deviates from the following order of severity :

1. Pain under the left breast.
2. Pain extending from under the left breast to mid-sternum.
3. Pain extending from mid-sternum towards the left shoulder.
4. Pain extending from the left shoulder down the left arm.
5. Pain extending from mid-sternum towards the right shoulder.
6. Pain extending from the left shoulder down the right arm.
7. Pain extending up the sternum towards the region of the throat.
8. Pain in the thyroid cartilage.

When this order of advance is maintained as the exciting cause is continued, pain in the throat expresses the degree of dangerous persistence in the exciting cause of heart distress, rather than the degree of danger in the disease itself.

VII. In proportion as the *right* side of the chest and *right* arm take

**On Affections of the Heart.* London, 1876.

precedence in the order of extension of pain at the heart and its neighborhood, the probability increases that the aorta is more diseased than the heart.

VIII. The volume of blood and other conditions being normal, the facility with which the pulse at the wrist is stopped by inspiration measures the *loss of heart power*.

ANGINA PECTORIS.

This disease is usually quoted as one typically connected with pain at the heart. This is by no means the case, as in many instances there is merely a sense of præcordial distress, but no actual pain (SANSOM). The diagnostic characters are :

1. The attacks are paroxysmal, coming on at varying intervals and duration (from a minute to an hour), without assignable cause.
2. There is always a *sensation of coldness* experienced, and often a cold sweat.
3. The heart's action is not increased, and may be diminished.
4. The chest is fixed and the breathing slow.
5. The pain, when present, may be of great intensity, of a cold, sickening character, directly referred to the heart, with an accompanying sense of impending dissolution.

Though a neurosis, angina pectoris distinctly points to some progressive degeneration of the muscular texture of the heart.

DIFFERENTIAL SIGNS OF AORTIC OBSTRUCTION AND AORTIC INCOMPETENCY.

<i>Aortic Obstruction.</i>		<i>Aortic Incompetency.</i>
Hypertrophy of left ventricle.	Effect on Heart.	Hypertrophy and dilatation of left ventricle.
To left.	Apex Displaced.	Downwards and to left.
To left greatly.	Cardiac Dullness Increased.	Downwards and to left, more increased than in obstruction.
Forcible.	Impulse.	More forcible than in obstruction, and over wider area.

<i>Aortic Obstruction.</i>		<i>Aortic Incompetency.</i>
To left of sternum.	Impulse, where ?	To left of sternum.
Onward, ventriculo-aortic.	Murmur, its Direction.	Backward; aortic-ventricular.
Systolic; loudest at beginning of systole.	Murmur, Time.	Diastolic; post-systolic; loudest at beginning of diastole.
Right border of sternum, in second intercostal space.	Point of Greatest Intensity.	Right border of sternum opposite third intercostal space.
Upwards to right sterno-clavicular articulation.	Direction in which Propagated.	Downwards along sternum and towards apex.
Loud, harsh, or blowing.	Character of Sound (very uncertain and of little value for diagnosis).	Of higher pitch than in obstruction, and loudness decreases rapidly from commencement.
Replaces first at base.	Relation to Normal Heart Sounds.	Replaces second at base, and occupies more or less of the pause.
Depends on condition of valves, but aortic second sound generally feeble.	Effect on Second Sound.	Apparent intensification of pulmonary second.
Systolic; in second right intercostal space.	Thrill.	Down sternum; diastolic.
	Effect on Pulse—	Visible pulsation in arteries (locomotive pulse).
Normal, or perhaps decreased.	Frequency.	Normal, or perhaps decreased.
Diminished.	Volume.	Increased.
Diminished.	Power.	Increased.
Regular.	Rhythm.	Regular.
Slow.	Duration.	Quick.
Arterial anæmia; angina pectoris often present.	General Tendency to	As in obstruction, but sudden death more common than in any other form of valvular disease.

DIFFERENTIAL SIGNS BETWEEN MITRAL OBSTRUCTION AND MITRAL INCOMPETENCY.

<i>Mitral Obstruction.</i>		<i>Mitral Incompetency.</i>
Hypertrophy and dilatation of left auricle and right chambers.	Effect on Heart.	Hypertrophy and dilatation of all four chambers.
To left and slightly downward.	Apex Displaced.	To left and downward.
To right of sternum, also to left at base, greatly.	Cardiac Dullness Increased.	To right of sternum, and also to left and downwards.
Feeble, undulating, and diffused.	Impulse.	Most of all.
To right of sternum and in epigastrium.	Impulse, where ?	Generally increased all over cardiac region.
Onward ; auriculo-ventricular.	Murmur, its Direction.	Backward ; ventriculo-auricular.
Diastolic, præ systolic, loudest at termination of diastole.	Murmur, Time.	Systolic, loudest at beginning of systole.
A little within and upwards from apex beat.	Point of Greatest Intensity.	A little outwards and upwards from apex-beat.
Upwards and inwards towards right base.	Direction in which propagated.	Upwards towards left base, and backwards into axilla, and behind.
Generally rough and harsh.	Character of Sound (very uncertain and of little value for diagnosis).	Blowing, bellows murmur.
Immediately precedes the first at apex, which is often very loud.	Relation to Normal Heart Sounds.	Replaces first at apex.

<i>Mitral Obstruction.</i>		<i>Mitral Incompetency.</i>
Intensification of pulmonary second.	Effect on Second Sound.	Intensification of pulmonary second.
Præsystolic; upwards and inwards from apex.	Thrill.	At apex and towards axilla.
	Effect on Pulse.—	
Increased.	Frequency.	Increased.
Diminished.	Volume.	Somewhat diminished.
Diminished greatly.	Power.	Diminished a little.
Very irregular.	Rhythm.	Somewhat irregular.
Quick.	Duration.	Nearly normal.
Pulmonary and venous congestion and slow death by asphyxia.	General Tendency to	As in obstruction.

DIFFERENTIAL SIGNS BETWEEN PULMONARY OBSTRUCTION AND TRICUSPID REGURGITATION.

<i>Pulmonary Obstruction.</i>		<i>Tricuspid Regurgitation.</i>
Systolic, onward, ventriculo-pulmonary.	Murmur.	Systolic, backward, ventriculo-auricular.
Left border of sternum, in second interspace.	Point of greatest intensity.	Base of ensiform cartilage.
Generally anæmia. Sometimes pressure of solidified lung (phthisical or pneumonic) upon the artery. Rarely organic, and then usually congenital.	Cause.	Generally secondary to disease of the lung or of left side of the heart.
Frequently <i>Bruit de diable</i> in the jugular veins.	Associated Signs.	Systolic pulsation of the distended jugular veins.

PERICARDITIS.

<i>Stage.</i>	<i>Symptoms.</i>	<i>Physical Signs.</i>
1st stage. (Inflammation without effusion).	If occurring during the course of acute rheumatism the disease may come on insidiously. Pain and tenderness in the cardiac region. Palpitation. Increased frequency of the pulse. Shortness of breath. Anxiety. Pyrexia.	Greater extent of visible impulse than natural, and on palpation the impulse is found to be more forcible, but unequal. Friction fremitus rare. Area of dullness not altered. Single or double friction sound, often preceded by a cantering action of the heart.* Heart sounds may be unchanged or even louder than in health, or they may be masked by the friction sounds.
2d stage. (With effusion).	Less pain. Pulse small, frequent, and sometimes irregular. Dyspnoea and often orthopnoea. Irritable cough. Loss of voice. Dysphagia. Fulness of veins in the neck. Duskiness of complexion. Great anxiety. Sleeplessness. Delirium.	Bulging of the præcordial region. Impulse displaced upwards and outwards; undulatory. On palpation, feeble and sometimes not perceptible; irregular. Area of cardiac dullness increased, first noticed at the base of the heart, and afterwards extending to left of apex beat, increased by the recumbent posture. Heart sounds feeble, distant and muffled at apex, louder and more superficial at base. Friction may or may not be heard.
3d stage. (Resolution).	A gradual subsidence of the symptoms of the second stage.	Diminution of the dullness from above and laterally. Heart sounds become clearer. Friction sounds may be heard with increased intensity.

POST-MORTEM APPEARANCES.—1st. Pericardium is dry, inflamed and has lost its polish. Exudation of lymph on both surfaces, but more on the visceral. The membrane may have a shaggy appearance.

*Cantering action of the heart, beside being met with in commencing pericarditis, is also caused by reduplication of the first or second sound of the heart against the thoracic wall at the moment of diastole, generally due to pericardial adhesions.

2d. Fluid in variable quantity in the sac of the pericardium. Usually sero-fibrinous, containing flocculi of lymph. It may be purulent or blood stained.

3d. Organized lymph on the pericardium with or without adhesions between the two surfaces, which may be intimately adherent or united by mesh-like adhesions.

The Pain of Pericarditis.—Rheumatic pericarditis is more or less painful; but secondary pericarditis developing in the acute stage of inflections or the chronic period of cachectic diseases, is *invariably painless*.

The pain is usually nearly equal on both sides of the chest; or it remains localized at the præcordial region, at the epigastrium, or at the left side of the xyphoid cartilage. In these positions the pain is *peripheric*, and its intensity does not increase the danger of the pericarditis. But when the pain is *central*, giving rise to disturbance of circulation and respiration, and simulating that of angina pectoris, it means acute inflammation of the cardiac nerves, and marks an exceptionally bad case of pericarditis.*

DIAGNOSIS BETWEEN ACUTE ENDOCARDIAL AND EXOCARDIAL (PERICARDIAL) SOUNDS.

The sounds respectively perceptible in *endocarditis* and *pericarditis* and allied disorders, may be discriminated by the following table:

ENDOCARDIAL.	EXOCARDIAL.
1. A blowing sound, soft and bellows-like; not affected by pressure.	1. A creaking, rubbing, rough, to-and-fro sound, intensified by pressure of the stethoscope and by the patient bending forwards.
2. A thrill may be felt on palpation.	2. On palpation friction fremitus may be felt.
3. The sound appears distant.	3. The sound appears near.
4. May exist only with the systole or the diastole.	4. Exists with diastole as well as systole.

* Dr. WERTHEIMER, *Thèse de Paris*, 1876; *Dobell's Reports*.

ENDOCARDIAL.

5. Accompanies the heart sounds.
6. Heard along the course of the great vessels, or conducted round to the back.
7. Persistent character.
8. Area of cardiac dullness not altered.

EXOCARDIAL.

5. Does not correspond with the rhythm of the heart.
6. Confined to the region of the heart and limited to site of production.
7. Rapid and frequent change in character; here to-day and gone to-morrow.
8. Increased area of dullness, if fluid be also present.

DIFFERENTIAL SIGNS OF CARDIAC DILATATION
AND PERICARDITIS WITH EFFUSION.

CARDIAC DILATATION.

- Dullness increased in the horizontal axis, of a square outline.
- Heart sounds feeble but clear.
- Transition from dullness to lung resonance more gradual.
- No friction sound.
- Limits of dullness persistent.
- Apex heat felt at lower limits of cardiac dullness.

PERICARDITIS WITH EFFUSION.

- Præcardial dullness extends upward and is of a pyramidal outline, with apex above.
- Heart sounds feeble, and distant sounding.
- Transition from dullness to lung resonance abrupt.
- Occasionally friction sound.
- Limits of dullness often vary from day to day or week to week.
- Apex heat some distance above lower limit of cardiac dullness. (SANSOM)

There is no doubt but that the general rules laid down for diagnosing pericardial effusion have been too vague. Dr. T. M. ROTCH, of Boston, has lately re-examined the subject, and succeeded in fixing a more perfect diagnostic sign than any hitherto mentioned. He shows that *an area of flatness, at from two to three centimeters from the*

right edge of the sternum in the fifth intercostal space, is almost absolutely sufficient to mark the presence of an effusion, and differentiate it from enlarged heart.*

DIFFERENTIAL SIGNS OF SIMPLE HYPERTROPHY.

	<i>Simple Hypertrophy.</i>	<i>Hypertrophy with Dilatation.</i>	<i>Simple Dilatation.</i>
Palpation.	Cardiac area extended. Impulse strong, lifting, or forcing.	Extent of visible impulse greatly increased. Action regular strong.	Extent of impulse greatly increased, but feeble, without lifting or forcing character.
Percussion.	Dullness increased laterally and downwards.	Dullness lateral and downwards.	Dullness increased in the horizontal axis of the heart.
Auscultation.	First sound dull, prolonged, intensified; second sound intensified. No respiratory murmur over præcordium.	Both sounds prolonged.	Both sounds short, abrupt, feeble. Feeble respiratory murmur.
Pulse.	Strong, full, incompressible.	Less strong, variable.	Weak, compressible, irregular.
Generalsymptoms.	Fullness in the head, epigastric weight, short breath, rarely debility; Bright's disease.		Dyspnoea, cough, palpitation, portal congestion, debility, ascites.

FATTY DEGENERATION OF THE HEART.

This condition of the heart is frequently associated with dilatation. Generally the area of præcordial dullness is normal or slightly increased; the impulse weak; the apex beat indistinct; the action irregular; the first sound short and feeble; the second prolonged and intensified; pulse is irregular.

**Medical Communications of the Mass. Medical Society.* 1878.

These physical signs obviously offer very little ground for a diagnosis. Of rational signs the following have been mentioned :

1. Attacks of faintness attended with sensations of great coldness, recurring without obvious cause. (Dacosta.)

2. *Arcus senilis*. For this to be significant of cardiac degeneration, the ring must be ill-defined, rather yellowish than white, and the rest of the cornea be slightly cloudy or opaque, not clear and translucent, a tinge of jaundice being present. When this is the case, "the chances of cardiac degeneration are formidable." (Sansom.)

3. Paroxysms of severe pain across the upper part of the sternum, and in the region of the heart.

4. Stomach derangements, accompanied sometimes by constipation, but more generally by diarrhoea and frequent vomiting. This Dr. L. H. J. HAYNE thinks "almost pathognomonic of this disease." (*Lancet*, January, 1875.)

5. The "Cheyne-Stokes" Respiration of ascending and descending rhythm is present in about one-third of the cases, and is probably dependent on atheroma of the aorta. (Hayden.) This symptom was first described in a case by Dr. CHEYNE, in 1818, as follows :

"For several days his breathing was irregular; it would entirely cease for a quarter of a minute; then it would become perceptible, though very slow; then, by degrees, it became heaving and quick; and then it would gradually cease again. This revolution in the state of breathing occupied about a minute, during which there were about thirty acts of respiration." In this case fatty disease of the heart was very marked, while the valves were healthy, and the aorta was "studded with steatomatous and earthy concretions."

No general attention, however, was directed to the peculiarity and striking character of this symptom, until, in 1846, Dr. STOKES urged its significance as a sign of fatty degeneration of the heart, believing that its presence was pathognomonic of this affection, and that it always betokened a fatal and not far distant termination. That it did not necessarily depend on fatty degeneration of the heart itself, was soon shown by Dr. SEATON REID, who described a case in which the muscular structure was healthy, while the mitral and aortic valves were both incompetent, the left ventricle was hypertrophied, and the

aorta dilated and atheromatous. It remains an important and significant, if not pathognomonic sign.

Dr. HAYDEN is of opinion that the absence of the impulse, or its extremely feeble character; the brief duration of the first sound, whether marked or sharp, in primary cases, and its almost complete or absolute extinction in those preceded by hypertrophy; the restriction of the sounds within a very limited area; and the occasional irregularity of the heart's action, will suffice, in the majority of cases, to establish the diagnosis of fatty heart from the physical signs alone. He adds that the incipency of primary fatty degeneration may be suspected, if the pulse, previously regular, becomes weak and irregular; if the surface be pale, the patient subject to dizziness or syncope, and the cardiac impulse feeble; although the sounds of the heart may not appreciably differ from their normal character.

CHAPTER IV.

DISEASES OF THE DIGESTIVE SYSTEM.

THE STOMACH AND BOWELS. *Principal Symptoms. The Tongue. The Appetite. Acidity (1) from Fermentation, (2) from Hypersecretion. Pain. Flatulence. Vertigo, (1) Stomachal, (2) Cerebral. Vomiting, (1) Stomachal, (2) Cerebral. Comparison of Atonic Dyspepsia, Chronic Gastritis, Gastric Ulcer and Gastric Cancer. Indigestion or Dyspepsia. Abdominal Phthisis. Obstruction of the Bowels, Enteritis and Colitis.*

THE LIVER. *Method of Examination. Significance of Pain in the Liver. Significance of Jaundice. Jaundice with Obstruction. Jaundice without Obstruction. Diseases Characterized by Enlargement with Smooth Surface; Enlargement with Uneven Surface; with Diminution of the Organ. Hepatic Abscess.*

INTERNAL PARASITES. *Tape-worm. Hydatids. Round Worms. Thread Worms. Trichinosis.*

DISEASES OF THE DIGESTIVE SYSTEM.

The principal symptoms to which the attention is directed in the diagnosis of diseases of the digestive organs are those connected with the tongue, the appetite, acidity, vomiting, flatulence, vertigo and pain.

THE TONGUE.

Late writers have shown considerable skepticism on the accuracy of the appearance of the tongue as indicative of the condition of the lining membrane of the stomach. It is true that a white and furred or a red and cracked tongue is occasionally seen in healthy subjects; but the standard of comparison should not be an ideally clean tongue, but the condition of the organ in the patient under

inspection when in health. Local causes, such as carious teeth and irritating agents (tobacco, tea, mercury, etc.), must be allowed for in the examination. When these and similar considerations are weighed together with the repeated instances of simultaneous affections of the stomach and tongue revealed by *post mortems*, no question remains that the latter organ often is of high diagnostic worth.

Dr. ROBERT FARQHARSON states in a recent lecture on the diagnosis of dyspepsia,* that in his experience, the class of tongue which coincides most commonly with digestive disturbance, is that in which the tongue seems to be covered with a thin, white fur, which on minute inspection is seen to be composed of a series of minute raised dots, and this usually coincides with pain immediately following meals.

If the tongue is raw and quite stripped of epithelium, with enlarged and prominent papilla, as we often see in phthisis, pain immediately after food and vomiting, are usual symptoms, or large, red papillæ may stand in bold relief through a pale coating, or the tongue may be simply large and pale and flabby, as though too big for the mouth.

Dr. WILSON FOX specifies the following conditions of the tongue as valuable aids to diagnosis in this class of diseases :

Dyspepsia with distinct atony of the stomach. The tongue broad, pale, and flabby, the papillæ generally enlarged, more especially on the tip and edges.

Dyspepsia from irritative causes. The tongue is redder than usual, often of a bright florid color, or even raw looking. It is often pointed at the tip, which, together with the sides, presents an extreme degree of injection, the papillæ standing out as vivid red points. This form is often associated with aphthæ, and is most common in scrofulous children and phthisical adults.

Dyspepsia from excessive or hurried eating, is apt to present a tongue uniformly covered throughout the greater part of its surface with a thick fur, whitish or brownish, with some degree of enlargement and redness of the papillæ at the tip and edges.

* *Medical Press and Circular.* July, 1877.

Neuroses of the stomach display a tongue which, as a rule, is clean, though often pale, broad and flabby.

THE APPETITE.

Anorexia, or loss of appetite, is observed in cancer, in most inflammatory states of the stomach, in obstinate constipation, as well as in the pyrexial state.

Boulimia, or excessive appetite, is found associated with enlargement of the stomach, in duration of its coats, also in diabetics and various forms of mental alienation.

Capricious and depraved appetite is met with in sufferers from intestinal worms, in some cases of chronic inflammation of the stomach, as well as in chlorosis, pregnancy and hysteria.

ACIDITY OF THE STOMACH, (1) FROM FERMENTATION, (2) FROM HYPER-SECRETION.

Acidity of the stomach, pyrosis, heartburn, and water-brash, are disturbances of the digestion frequently included in one category. In all, an excessive amount of acid is formed in the stomach; but in some cases the origin of the acid is to be sought in fermentative action, and in others in hypersecretion from the coats of the stomach, thus calling for different lines of treatment.

In both forms the process of digestion is impaired, but to a more marked degree in the fermentative variety, in which also as a natural consequence the impairment of nutrition of the patient is more obvious. As the fermentative action interferes with the functions of the liver, the stools are apt to be pale, and the patient suffer from constipation. The frequency with which attacks of gout and rheumatism are preceded by this form of acidity points to a diathetic process involving the general constitution.

The following differential table, based on one given by Dr. WILSON Fox, exhibits in a concise form the distinction between the two forms of acidity :

ACIDITY FROM FERMENTATION.

Occurs in connection with causes which impede digestion.

Usually attains its height some hours after food, and is more marked in proportion to the size of the meal, and inversely to the digestive powers.

Flatulence is common.

Pain not severe, and but slightly or not at all relieved by eating.

Vomiting is rare.

Vomited matters may contain organic acids, torulæ and sarcinæ.

Urine frequently shows an alkaline reaction.

ACIDITY FROM HYPER-SECRETION.

Is most common as a reflex symptom, or in connection with other nervous disturbance, or with ulcer and cancer of the stomach.

Occurs in the empty stomach, or rapidly after food, and is often of great intensity after a small meal.

Flatulence is rare.

Pain more severe, most felt when the stomach is empty, and is relieved by food.

Vomiting is common.

Vomited matters apt to show hydrochloric acid in excess.

Urine rarely alkaline.

PAIN.

Pain in the stomach is indicative of one of the following conditions:

1. The presence of irritating foreign bodies, as mechanical substances, corrosive poisons, blood or bile in large quantities, inflation from air or gases, etc.
2. Organic diseases altering the anatomical structure of the coats, especially gastritis, chronic ulcer, cancer and thickening of the pylorus.
3. Perverted secretions, as in acidity.
4. Perverted innervation, which may be a local neurosis, as in forms of dyspepsia where pain is the prominent symptom, or as in cramp of the muscles of the stomach; or it may be from general disorders, as in patients of a rheumatic or gouty diathesis; or it may be referable to the general nervous system, as in pure neuralgia of the stomach and hysteria.

Pain in the stomach must be distinguished from rheumatic and

other pains in the abdominal muscles immediately over the stomach. In the latter the superficial tenderness is much greater; it is usually more marked in the left recti and obliqui abdominis muscles, and especially near their attachment to the ribs, where moderate pressure cannot affect the stomach, and by its independence of the digestive acts (BRICQUET).

Pain in the stomach is also liable to be simulated by pain in the course of the transverse colon, especially when the colon is distended with gas. The diagnosis may usually be made by gentle percussion, the note arising from tapping a distended colon being less prolonged and of a higher pitch than that elicited from the stomach. The pain from the colon is also less felt at the ensiform cartilage than in the hypochondriac regions, and often extends towards the sigmoid flexure, and is associated with other signs of intestinal flatulence.

Pain in the stomach depending on diseases of the spinal cord is distinguished by its superficial tenderness, by the presence of other painful points in the affected nerve, and by the co-existence of other nervous, and the absence of digestive symptoms.

FLATULENCE AND ERUCTATION.

Dyspeptics generally suffer from gases in the stomach, producing eructations. These gases are either generated from imperfectly digested food, or are secreted from the capillaries.

Eructations having the taste or odor of spoiled eggs, and occurring during the process of digestion, indicate the presence of sulphureted hydrogen from the decomposition of food.

When the eructations are odorless, and occur chiefly in an empty state of the stomach, they indicate a gaseous secretion of carbonic acid, hydrogen or nitrogen from the coats of the capillaries.

In the former case the indications are to use anti-ferments; while in the latter relief is often attained by simply regulating the hours of meals, so as to avoid long intervals between the times of taking food.

VERTIGO.

Stomachal vertigo is not unfrequently difficult to distinguish as such, because in all severe vertigoes the stomach is disturbed. In undoubted examples the vertigo always bears some distinct relation to the condition of the stomach, coming on only when that organ is full, or only when it is empty, or only after certain articles of food, as shell-fish, strawberries, coffee, fresh bread, etc. There are also generally some dyspeptic symptoms other than vertigo complained of. Some other points are mentioned in the following table:

STOMACHAL VERTIGO.

Usually appears in definite relation to taking food; either after a meal, after particular ingesta, or on an empty stomach.

Generally occurs in middle life.

The apparent motion is felt to be subjective, not real (GOWERS).

Special senses not involved beyond perverted vision. Consciousness never lost.

CEREBRAL VERTIGO.

Occurs without relation to the taking of food.

Occurs in advanced life.

A sense of movement or actual turning of objects.

Deafness and tinnitus aurium often present. Sometimes loss of consciousness.

VOMITING, (1) FROM DISEASE OF THE STOMACH,
(2) FROM DISEASES, OF THE BRAIN.

Persistent vomiting is a frequent symptom of obstinate gastric disturbance; and it has also been frequently noted as a symptom associated with organic disease of the brain and cord, not unfrequently masking them and diverting the attention of the practitioner from the real seat of lesion. Thus in suddenly induced cerebral anæmia, in the commencement of the paralysis which follows diphtheria, in tubercular meningitis, in concussion of the brain, in poisoning affecting the brain and cord, and in fact in almost any disease of the cerebral centers, it is possible that one of the earlier and most prominent symptoms will be obstinate vomiting.

In a general way it may be stated that vomiting arising from the stomach is attended with more or less pain, with a furred tongue,

with constipation or diarrhœa, sense of weight at the epigastrium, and preceded for a considerable period by a sense of nausea.

Vomiting from cerebral causes on the other hand is usually characterized by an absence of these symptoms, by a clean tongue and a history of freedom from digestive disturbance.

Dr. ROMBERG has given the following criteria for the discrimination of vomiting of cerebral origin :

1. The influence of the position of the head ; the vomiting is arrested in the horizontal, and recurs and is frequently repeated in the erect position.

2. The prevailing absence of premonitory nausea.

3. The peculiar character of the act of vomiting ; the contents of the stomach are ejected without fatigue or retching, as the milk is rejected by babies at the breast.

4. The complication with other phenomena, the more frequent of which are pains in the head, and irregularity of the cardiac and radial pulse, increased during and subsequent to the act of vomiting.

The following differential table further exhibits the points of contrast (from Dr. W. Fox):

GASTRIC VOMITING.	CEREBRAL VOMITING.
Epigastric pain and tenderness are common, and in some cases very marked.	Epigastric pain and tenderness are rare.
Nausea is constant.	Nausea is frequently absent.
Oppression and weight at the epigastrium are constant.	These are rare.
Bowels are variable.	Bowels are constipated.
The tongue is loaded, except in certain cases of cancer or ulcer.	The tongue is usually clean.
Headache is absent, or not intense, chiefly frontal, of gradual invasion, and relieved by the vomiting.	Headache often violent, the invasion sudden, and not relieved by vomiting.

GASTRIC VOMITING.

Vertigo is rare and relieved by vomiting.

Other nervous phenomena are rarely present, and then only in slighter forms, and relieved by vomiting.

CEREBRAL VOMITING.

Vertigo is very frequent and not relieved by vomiting.

Indistinctness of vision and diplopia. Confusion of ideas. Loss of memory. Not relieved by vomiting. Anaesthesia or paresthesia, paralysis or cramp, convulsion or coma, are common or soon supervene.

NATURE OF VOMITED MATTERS.

The indications derived from the nature of the matters thrown up in vomiting are as follows :

Ingesta. The food is returned unaltered, or but slightly changed, in nervous vomiting ; in a half digested state and strongly acid in chronic inflammation and cancer of the stomach ; mixed with the microscopic forms known as sarcinæ and torulæ in chronic gastritis, gastric ulcer and cancer.

Mucus is vomited in a catarrhal or sub-inflammatory condition of the stomach.

Bile appears whenever the retching is long and violent, and does not indicate any special disease.

Pus is not formed in the stomach, and when present in the vomit indicates disease in the esophagus.

Fæces also indicates a disease elsewhere than the stomach, usually an obstruction of the intestinal canal.

Blood is thrown up in gastric cancer and ulcer, in severe gastritis, in external injuries, vicariously of the uterus, and frequently from disease of the heart or liver, producing distension of the capillaries. The presence of blood directly proceeding from the stomach, says Dr. Fox, if accompanied by severe pain, is almost pathognomonic of either gastric ulcer or cancer.

ATONIC DYSPEPSIA, INFLAMMATORY DYSPEPSIA,
GASTRIC ULCER, GASTRIC CANCER.

The chief points in the diagnosis of diseases of the stomach are those connected with the differentiation of simple dyspepsia (atony of the stomach), inflammatory dyspepsia (gastritis, gastric catarrh, catarrhal inflammation of the stomach), gastric ulcer and gastric cancer.

From this group the nervous disturbances of the stomach are broadly marked off by the superficial character of the pain in these latter, its independence of the acts of digestion and the nature of the food, the co-existence of other neuralgiæ, the frequent absence of emaciation and other disturbances of nutrition, and the sex and age of the patients.

The following comparative table drawn from the works of Drs. W. Fox, WILLIAM BRINTON, and DA COSTA, illustrates the main points of difference in the four diseases named :

ATONIC DYSPEPSIA.

No pain or soreness at the epigastrium. Sensation of weight or load, rather than tenderness.

Symptoms of indigestion. Appetite impaired. Thirst generally absent. Tongue pale and flabby.

Vomiting rare.

No hemorrhage.

Bowels may be regular.

No febrile symptoms

Nutrition not materially interfered with.

Not confined to any age.

Course of disease uniform ; may be cured.

No tumor. Percussion resonant.

CHRONIC GASTRITIS.

Pain at the epigastrium somewhat augmented by food ; also soreness. Both constant, though not severe.

Indigestion present. Appetite capricious. Thirst increased. Tongue furred and red at edges.

Sometimes vomiting.

Hemorrhage absent, or rare and trifling.

Bowels constipated.

Occasional slight pyrexia (Fox).

Slight emaciation ; slightly earthy tint to skin (Fox).

More common in middle or advanced life.

Disease with marked exacerbations and remissions. May be relieved or cured.

No tumor. Percussion resonant.

GASTRIC ULCER.

Pain at the epigastrium much augmented by food; is intermittent; subsides after digestion; pain in paroxysms, but not lancinating; epigastric soreness strictly localized. Sometimes a painful spot over lower dorsal vertebra.

Symptoms of indigestion slight.

Vomiting may be present or not. Usually relieves the pain.

Abundant hæmatemesis.

Bowels slightly or not constipated.

No fever present.

Frequently extreme pallor and debility.

May occur in middle-aged persons, but is frequently seen in young adults, especially females.

Duration uncertain; may get well; may run on rapidly to perforation; or may last for years.

No tumor. Percussion resonant.

GASTRIC CANCER.

Pain paroxysmal, radiating, often severe and lancinating; rarely remitting; never intermitting; little or not at all affected by food; not always accompanied by soreness.

Symptoms of indigestion more marked. Extreme acidity of the stomach.

Vomiting a very frequent symptom. Does not relieve the pain.

Hæmatemesis not very abundant; but occasioning frequently vomiting of a substance resembling coffee grounds.

Constipation obstinate.

Fever not uncommon.

Gradual and progressive loss of flesh and debility.

Most common in elderly people; rarely occurs in persons under forty years of age.

Duration about one year; very rarely reaches two. Termination fatal.

Generally a tumor. Percussion variable.

In reference to the value of *percussion* in diagnosing gastric cancer, Professor PETER, of Paris, has directed attention to the fact that when superficial percussion, *percussion en dèdolant*, is made over the stomachal region somewhat distended by gas, there is found at certain points, especially in the region of the greater curvature, a certain obscurity of the note alternating with the zones of sonority. But this sign is absolutely wanting on deep percussion such as is ordinarily employed. Prof. PETER, by this means, diagnosed a cancer of the stomach situated at the posterior surface of the greater curvature, with some cancerous nodules probably disseminated through the epiploon below the splenic region and also in the hypogastric region. At this last point also superficial percussion gave the same results.

An early sign of gastric cancer is the presence of enlarged glands in the *skin of the navel* (MAUNDER). To ascertain the mobility and outline of the stomach, the patient may be desired to drink one or two tumblers of soda water. This distends the stomach and makes the tumor more prominent.

INDIGESTION OR DYSPEPSIA.

The symptoms of indigestion are tabulated by Dr. MURCHISON as follows*:

1. A feeling of weight and fullness at the epigastrium and in the region of the liver.
2. Flatulent distension of the stomach and bowels.
3. Heartburn and acid eructations.
4. A feeling of oppression, and often of weariness and aching pains in the limbs, or of insurmountable sleepiness after meals.
5. A furred tongue, which is often indented at the edges, and a clammy, bitter, metallic taste in the mouth, especially in the morning.
6. Appetite often good; at other times anorexia and nausea.
7. An excessive secretion of viscid mucus in the fauces, and at the back of the nose.
8. Constipation, the motions being scybalous, sometimes too dark, at others too light, or even clay colored. Occasionally attacks of

* *Functional Derangements of the Liver.* London, 1874.

diarrhœa, alternating with constipation, especially if the patient be intemperate in the use of alcohol.

9. In some patients attacks of palpitation of the heart, or irregularity or intermission of the pulse.

10. In many patients occasional attacks of frontal headache.

11. In many, restlessness at night and bad dreams.

12. In some, attacks of vertigo and dimness of sight, often induced by particular articles of diet.

ABDOMINAL PHTHISIS.

Abdominal phthisis (tubercular peritonitis) in its acute forms, closely simulates typhoid fever. There are febrile symptoms attended with remissions, heat and dryness of the surface, pains in the limbs, drowsiness and disordered secretions, and diarrhœa. It differs from typhoid in these particulars.

1. The pain is diffused over the abdomen, not limited to the cæcal region.

2. There are no red spots.

3. There is generally tubercular disease in other organs.

4. The temperature has not the morning remissions of typhoid.

OBSTRUCTION OF THE BOWELS.

The causes of a mechanical stoppage of the bowels are principally the following: intussusception; impaction of fæces; strictures; twisting of the bowel (volvulus); herniæ; pressure of tumors.

The symptom first noticed is constipation with colicky pains, which do not yield to ordinary remedies; slight distension of the abdomen and some soreness on pressure. Vomiting follows, very severe, even becoming fæcal. It is liable to be confounded with peritonitis and strangulated hernia. The following rules for diagnosis have been laid down by the eminent surgeon, Mr. JONATHAN HUTCHINSON, of London:

1. When a *child* becomes suddenly the subject of symptoms of bowel obstruction, it is probably either intussusception or peritonitis.

2. When an *elderly person* is the patient, the diagnosis will gener-

ally rest between impaction of intestinal contents and malignant disease (stricture or tumor).

3. In *middle age* the cause of obstruction may be various; but intussusception and malignant disease, both of them common at the extremes, are now very unusual.

4. Intussusception cases may be known by the frequent straining, the passage of blood and mucus, the incompleteness of the constipation, and the discovery of a sausage-like tumor, either by examination *per anum* or through the abdominal walls.

5. In intussusception, the parietes usually remain lax, and, there being but little tympanites, it is almost always possible, without much difficulty, to discover the lump (or sausage-like tumor) by manipulation under ether.

6. Malignant stricture may be suspected when, in an old person, continued abdominal uneasiness and repeated attacks of temporary constipation have preceded the illness. It is to be noted also that the constipation is often not complete.

7. If a tumor be present and pressing on the bowel, it ought to be discoverable by palpation, under ether, through the abdominal walls, or by examination by the anus or vagina, great care being taken not to be misled by scybalous masses.

8. If repeated attacks of dangerous obstruction have occurred with long intervals of perfect health, it may be suspected that the patient is the subject of a congenital diverticulum, or has bands of adhesion, or that some part of the intestine is pouched and liable to twist.

9. If, in the early part of a case, the abdomen become distended and hard, it is almost certain that there is peritonitis.

10. If the intestines continue to roll about visibly, it is almost certain that there is no peritonitis. This symptom occurs chiefly in emaciated subjects, with obstruction in the colon of long duration.

11. The tendency to vomit will usually be relative with three conditions and proportionate to them. These are (1) the nearness of the impediment to the stomach, (2) the tightness of the constriction, and (3) the persistence or otherwise with which food and medicine have been given by the mouth.

12. In cases of obstruction in the colon or rectum, sickness is often wholly absent.

13. Violent retching and bile-vomiting are often more troublesome in cases of gall-stones or renal calculus simulating obstruction than in true conditions of the latter.

14. Fæcal vomiting can occur only when the obstruction is moderately low down. If it happen early in the case, it is a most serious symptom, as implying tightness of constriction.

15. The introduction of the hand into the rectum as recommended by SIMON, of Heidelberg, may often furnish useful information.

INFLAMMATORY DIARRHŒA (ENTERITIS) AND DYSENTERY (COLITIS).

These diseases, both alike in being inflammations of the mucous membrane of the intestinal tract, are frequently associated. But for therapeutic as well as prognostic purposes, it is desirable to recognize the distinctions which they present in well marked types. They are:

ENTERITIS.

Seat of inflammation is in the small intestine.

Usually begins with colic, nausea and vomiting, constipation (rarely diarrhœa), chilliness, soon followed by high fever, thirst and hot skin.

Pulse at first tense and full; soon becomes small, wiry, quick.

Pain paroxysmal, local tenderness marked, greatly increased by pressure.

Stools mucous, rarely blood, very rarely pus. No scybala. No tenesmus.

Aortic pulsation felt by the patient on the right of the umbilicus.

DYSENTERY.

Seat of inflammation is in the large intestine.

Usually begins with painless slight diarrhœa, followed by chill, slight or no fever, sense of weight near the anus. No colic.

Pulse often little excited; or if fever is high, full and rapid.

Pain more moderate, usually distinctly over the colon, moderate tenderness.

Stools scanty, bloody, contain pus, scybala, little fæces. Marked tenesmus.

Aortic pulsation not noticed by the patient.

DISEASES OF THE LIVER.

Previous to an examination of the liver, the patient should have a free action of the bowels, as fæcal accumulations are a constant cause of diagnostic errors. He should lie on his back on a firm bed, with his knees drawn up and the abdominal muscles relaxed. Palpation should be upon the skin directly, not on the clothing. The physician seating himself on the patient's right side, should apply the tips of the fingers of the right hand just below the free border of the ribs, and request the patient to make full inspiration and expiration. He will thus be able to feel the upper edge and surface of the liver and ascertain the *condition of its surface*, whether smooth or nodular. By percussion, which should be made while the patient is in the same position, the *size* of the liver can be quite accurately mapped out. These two facts are the first steps to a diagnosis; as most hepatic diseases can be assigned to one of these classes,

1. Liver enlarged, with smooth surface.
2. Liver enlarged, with nodular surface.
3. Liver atrophied.

Pain in the hepatic region should be examined; whether dull or acute, persistent or intermittent, etc. The condition of *jaundice* is ascertained, in light cases, by examining the under surface of the tongue and the conjunctiva of the eye, which will display the icteric discoloration when the general surface does not. A still more delicate test of the presence of jaundice is derivable from examination of the urine. The following three tests are employed by Prof. HARDY, of Paris:

1. *Chloroform*: When this is poured upon normal urine it sinks by reason of its great density to the bottom of the test-glass, exhibiting there a crystalline transparency. If we pour it on the icteric urine, and, having shaken the test-tube plugged by the thumb, leave it quiet for a moment, the chloroform deposit contrasts strongly by its dull color with the yellow of the superficial layers—the yellow color being deeper in proportion to the quantity of bile in the urine. It is an excellent test of icteric urine.

2. *Iodine*: When the iodine is poured upon the icteric urine the

mixture must not be shaken. At the upper part of the tube three very distinct colors are observable—the first layer formed by the tincture is violet : below this is a kind of diaphragm of sea-green color ; and the third layer, consisting of the urine, and occupying the lowest part, is yellow.

3. *Nitric Acid*: When this agent has been poured in, the mixture after shaking assumes a bottle-green color, passing into an olive. This is an entirely special and very characteristic appearance.*

With these hepatic symptoms determined, a study of the following tables will in most instances readily supply a correct diagnosis :

THE SIGNIFICANCE OF PAIN IN THE LIVER.

Pain having its source in the liver is divided by Dr. CHARLES MURCHISON† into three varieties, each of diagnostic significance.

CHARACTER OF PAIN.

I. Pain severe, paroxysmal, with distinct intermissions ; little or no local tenderness ; no fever ; often associated with jaundice.

II. Pain moderate, continuous, slightly increased by pressure, often associated with pain in the right shoulder, slight febrile symptoms and jaundice.

III. Pain severe, constant, greatly increased by pressure, motion, coughing, etc. More or less fever ; per-haps jaundice.

DISEASES FOUND IN.

Obstruction of the bile duct by gall-stones etc ; hepatic colic ; hepatic neuralgia (when jaundice is absent probably the latter).

Congestion and commencing inflammation of the organ ; catarrh and partial obstruction of the bile ducts ; acute atrophy.

Always indicates inflammation of the capsule (perihepatitis), which may supervene in various diseases (cirrhosis, hydatids, etc.).

Hepatic pain may be simulated by various other conditions. The principal ones, with their characteristic differences, are as follows :

1. *Pleurodynia*.—The pain is strictly localized to a small spot. Absence of hepatic disturbance.

2. *Intercostal Neuralgia*.—Chiefly referred to three points in the course of the nerve : (1) The vertebral groove ; (2) The axillary

**Revue de Therapeutique*, Aug., 1878.

†*Lectures on Diseases of the Liver*.

region; (3) The termination of the nerve in front. Co-existence of neuralgia elsewhere. Absence of hepatic symptoms.

3. *Pleurisy*.—Presence of pyrexia and physical signs of the disease.

4. *Gastrodynia*.—Comes on with relation to food (stomach always either full or empty). Pyrosis.

5. *Intestinal Colic*.—Pain referred to the umbilical region. No jaundice. Blue line of lead poisoning. Errors of diet.

6. *Renal Colic*.—Pain chiefly referred to one kidney, when it shoots to the testicle and down the thigh. No jaundice. Hæmaturia and renal calculus.

Little or no hepatic pain is felt in

1. The waxy, lardaceous, or amyloid liver.

2. The fatty liver.

3. Simple hepatic hypertrophy.

4. Hydatid tumor.

THE SIGNIFICANCE OF JAUNDICE.

The common and obvious symptom of jaundice results either (1) from obstructions of the common bile duct; or (2) independent of any obstruction of the duct. The diagnosis of these two conditions may be presented as follows:

JAUNDICE FROM OBSTRUCTION.

When persistent, speedily becomes intense.

The stools are clay-colored.

Tumor in the region of the gall bladder often present.

May appear suddenly in a person in good health.

Intermittent jaundice in advanced life signifies gall-stones.

Pain, usually, in severe paroxysms.

Co-existence of ascites, pregnancy, pyloric cancer (obstruction from without).

JAUNDICE WITHOUT OBSTRUCTION.

Persists and continues slight.

The stools are natural.

No tumor there.

Appears gradually, unless there is a history of shock.

Intermittent jaundice in youth signifies catarrh of the duodenum.

Pain usually more or less constant.

Preceding severe mental emotion, pyæmia, malarial fevers, phosphorus poisoning, epidemic prevalence.

The principal diseases which are associated with these varieties of jaundice are the following:

DISEASES EXHIBITING JAUNDICE FROM OBSTRUCTION.

<i>Disease.</i>	<i>Diagnosis.</i>
1. GALL STONES.	Biliary colic present. Pain acute, paroxysmal, referred to the gall bladder, and from this round to the right scapula. Tenderness absent or slight. Irregular rigors. No fever. Severe vomiting. Jaundice appears after a day or two. Pathognomonic; the presence of gall stones in the fæces.
2. HYDATIDS.	Liver enlarged and altered in form but painless. Biliary colic with fever, quick pulse and high temperature. Pathognomonic; hydatid vesicles in the fæces.
3. CANCER AND TUMORS.	Antecedent history of visceral cancerous disease. Pain and nausea after taking food. A hard and sensitive tumor in the abdomen. Hemorrhage from the stomach or bowels.

DISEASES EXHIBITING JAUNDICE WITHOUT OBSTRUCTION.

<i>Disease.</i>	<i>Diagnosis.</i>
1. MALARIAL FEVERS. Yellow Fever, Pyæmia.	History of malarial or specific poisoning, or actual presence of one of the diseases named.
2. EPIDEMIC JAUNDICE.	Gastric catarrh; stools pale; epigastric soreness; nausea or vomiting; loss of appetite; often commences with a chill after exposure. Most epidemics of jaundice seem to have been due to malarious poison or vitiated atmosphere. Infantile jaundice is of the latter character.
3. NERVOUS JAUNDICE.	History of severe mental emotion, great suffering or sudden shock. Onset rapid; often cerebral symptoms
4. JAUNDICE FROM CONGESTION.	Feeling of weight and soreness over liver. Bad breath; poor appetite; furred tongue; vertigo. Right decubitus. Urine scanty and high colored. Slight dyspnoea. Bowels sluggish

Acute atrophy, mineral poisons, especially by phosphorus, and very obstinate constipation, are other occasional causes of this form of jaundice.

CLASSIFICATION OF HEPATIC DISEASES WITH REGARD TO THE SIZE OF THE LIVER.*

I. LIVER ENLARGED, SURFACE SMOOTH.

SIMPLE HYPERPLASIA.	Liver enlarged, smooth, painless; absence of other symptoms.
LEUKEMIC HYPERPLASIA.	Liver enlarged and smooth. Spleen enlarged. Pallor of the skin. Pathognomonic; presence of a marked increase of the white blood globules, 1:20 and upwards.
CONGESTION. (a) Simple.	Enlargement moderate. Tenderness; conjunctiva jaundiced; stools pale; bowels irregular; tongue coated; low spirits; headache; vertigo; noises in the ears. No jaundice or dropsy.
(b) From cardiac disease.	Liver enlarged, smooth. Slight jaundice. Some dyspnoea. Dropsical effusions. Mitral or aortic disease. Emphysema or induration of the lungs.
(c) From malaria.	Enlargement slight. Enlarged spleen. History of malarial disease. Pathognomonic: the malarial pigment in the blood.
WAXY DEGENERATION.	Enlargement considerable, uniform, of slow growth, borders sharply defined, feel firm. Pain slight. Patient emaciated and cachectic. Splenic enlargement common. Diarrhoea and dyspepsia. History of phthisis, syphilis or protracted suppuration.
FATTY DEGENERATION.	Enlargement considerable, borders rounded, feel doughy. No tenderness nor pain. Spleen small; jaundice slight or absent. Diarrhoea. A pale, smooth, greasy skin. History of intemperance, phthisis or indolent life.

* Partly taken from E. J. JANEWAY, *Diagnosis of Hepatic Affections*. N. Y., 1877.

HYDATID TUMORS.	Enlargement considerable, irregular, painless; usually of left lobe of the organ. Feel elastic or fluctuating. Jaundice rare. Increase of size slow. No constitutional symptoms.
SIMPLE ATROPHY.	Liver small, surface even. Preceded by ascites, dyspnoea, serious disease of heart or lungs, or signs of congestion.
ACUTE YELLOW ATROPHY.	Rare. Jaundice always present, though rarely intense. Pain considerable. Tenderness. Generally vomiting; splenic dullness. Pulse irregular. The typhoid state common. Urine dark, acid, sp. grav. 1012-1024; absence of urea, uric acid, and the chlorides; presence of leucine and tyrosine (pathognomonic). Intestinal hemorrhage and hæmatemesis common.

II. LIVER ENLARGED, SURFACE NODULAR OR IRREGULAR.

ABSCESS OR TROPICAL HEPATITIS.	Liver enlarged, irregular surface bulging. Dull heavy pain. Jaundice rare. Pyrexia and chills. History of residence in a warm climate.
CANCER.	Enlargement often very great, progressive, irregular; nodular excrescences often to be felt. Feel hard and resistant. Pain lancinating and tenderness acute. No febrile symptoms. Jaundice. "The co-existence of enlarged liver with persistent jaundice ought always to raise the suspicion of cancer" (MURCHISON). Dyspepsia, nausea, vomiting, constipation or diarrhoea, short, dry cough, ascites. Patients over 40. In suspected cancer of the liver the urine should always be examined; half a drachm of strong nitric acid should be added to half an ounce of the urine. If the fluid changes to a dark or black hue, and especially if no albumen is present, and the liver is either increased or diminished in size, the diagnosis of <i>melanotic cancer</i> is rendered very probable. (Dr. EISELT, of Prague.)
SYPHILITIC LIVER.	Liver enlarged, surface nodulated, lobes irregular, separated by deep fissures.

III. LIVER DIMINISHED IN SIZE.

CIRRHOSIS, OR CHRONIC
ATROPHY.

Liver small, sometimes only half size, surface granular or nodulated; "hob-nail liver." Outset insidious, with signs of disordered digestion. Dull pain and slight tenderness in hepatic region. Ascites common. Spleen often enlarged. Superficial veins of the abdomen enlarged. Hemorrhoids frequent. Jaundice rare or slight. Progressive emaciation and debility. History of spirit drinking almost invariably.

HEPATIC ABSCESS.

It has lately been shown* that an obscure and chronic form of hepatic abscess is a far more common disease in the United States than is generally supposed, and that it is often exceedingly difficult of diagnosis.

These abscesses may exist without any local symptoms or such general disturbance of the system as is commonly regarded as indicating their presence, and are a very common concomitant of prolonged malarial poisoning. The pathognomonic sign of their presence is the *discovery of pus on aspiration of the parenchyma of the liver*. This operation is not dangerous, and there need be no hesitation in its performance. The place of election is one of the intercostal spaces. The rational symptoms may be collated as follows:

1. Gastric and intestinal derangements; dyspeptic symptoms of various kinds.
2. Slight jaundice; conjunctivæ yellow; complexion sallow.
3. Depression of spirits, hypochondria or melancholy. This is a very usual symptom, and so important that Dr. HAMMOND recommends that in all cases of hypochondria or melancholia, the region of the liver should be carefully explored, and even if no fluctuation be detected or any other sign of abscess be discovered, aspiration, with proper precautions, should be performed. If pus be evacuated, the operation may be expected to be followed by a cure of the

*Tauscky, *Med. Record*, April 20, 1878; Hammond, *St. Louis Clin. Record*, June, 1878; Byrd, *N. Y. Med. Journal*, July, 1878, etc.

mental disorder, as well as by the preservation of the life of the patient from the probably fatal consequences of hepatic abscess.

4. Sense of weight or pain in the right side; more or less tenderness on pressure (all local symptoms often absent).

5. Circumscribed fluctuation over the hepatic region. This is a positive sign, but is by no means always to be discovered.

6. Cerebral symptoms, as vertigo, cephalalgia, insomnia, and hyperæmia.

7. Slight rigors, and feverishness, simulating some of the more chronic forms of intermittent fever.

INTERNAL PARASITES.

The symptoms to which parasites in the intestinal canal and other organs give rise are numerous, but by no means specific or definite. The following tabular arrangement sets forth the more prominent :

TAPE WORM.

Pain and discomfort in the belly ; variable appetite ; constipation and diarrhœa alternating ; *itching at the nose or anus* without local cause, low spirits, loss of flesh, nervous seizures. Stools unusually dark or light.

Pathognomonic: The discovery of joints in the stools, or about the anus, or of eggs in the fæces (microscopic).

HYDATID CYSTS.

These occur chiefly in the lungs and liver. (See Diseases of the Liver.) They begin with a rounded, tense, smooth, elastic swelling, painless until inflammation begins, and without other symptoms than those caused by their size. They are often attended with the "hydatid thrill." This may be felt by placing the left hand flat and closely upon the tumor, then percussing sharply with the fingers of the right hand. A long sustained tremor is observed, "like that experienced on an iron railway bridge during the passage of a train."

Pathognomonic: Echinococci or microscopic hydatids in the contained fluid, which may safely be drawn by aspiration.

ROUND WORMS, LUMBRICI.

Symptoms of intestinal irritation. Capricious appetite. Pain of a gnawing or griping character. Tenderness on deep pressure over the abdomen. Tumid condition of the belly. Alternate constipation and diarrhœa. The tongue pale, flabby, indented by the teeth, and often has a peculiar shiny appearance. Pupils generally dilated. Squinting, nervous twitchings, or even convulsions. Sleep is restless, with grating of the teeth and waking with sudden starts. Fever may appear, often of a remittent type (worm fever, vermin fever).

THREAD WORMS.

Violent itching and irritation at the anus and vagina, increased at night. Tendency to strain. Itching at the nose.

TRICHINÆ TRICHINOSIS.

First Stage: Gastro-intestinal disturbances; thirst; loss of appetite; nausea; colicky pain; in the abdomen; constipation or diarrhœa; coated tongue; feverishness. *Second Stage:* Swelling and stiffness of the muscles; muscular soreness; œdema of the subcutaneous tissue; copious sweating; debility and increased fever; dyspnœa, hoarseness and loss of voice; dropsy commencing in the eyelids and face, and proceeding to the extremities; difficulty of motion and respiration.

Pathognomonic: Presence of trichinæ in the fæces, or in the muscular structure.

The differential diagnosis from *rheumatism* is in the soreness being in the muscles and not the joints; from *typhoid fever* in the unusual pain and stiffness; the early swelling, dropsy, etc.

Trichinæ do not colonize equally throughout a muscle, but in groups here and there. It is best, therefore, to dissect out a muscle lengthwise in order to judge of their number.

The very large number of symptoms attributed to the presence of worms in the intestinal canal is the irritation they cause, implicating the general nervous system. This, occasionally, extends so far as to produce a "worm fever," which in many respects resembles a mild remittent with unusually pronounced nervous symptoms. The tongue is pale and flabby, and often has a peculiar shiny appearance (DATE). The pupils are generally dilated. Squinting sometimes occurs, and nervous twitchings of a choreic character. The fever is often high, with great heat of skin, and the cerebral manifestations being marked, may lead to the suspicion of hydrocephalus. From this it can be distinguished by the mere direct remissions; by the previous history, showing the primary symptoms to be referable to derangements of the elementary canal; by the less obstinate constipation; and by the expulsion of worms.

It has also been confounded with tubercular disease. Here the most important diagnostic point is the temperature. This in tubercular disease is always high; but when the irritation is from worms it is either normal or but temporarily elevated above the normal standard.

CHAPTER V.

DISEASES OF THE URINARY SYSTEM.

The Early Signs of Bright's Disease. Comparative Diagnosis of the Different Forms of Bright's Disease (Acute Parenchymatous Nephritis, Chronic Tubal Nephritis, Yellow Fatty Kidney, Secondary Contraction of Kidney, Interstitial Nephritis or Renal Cirrhosis, Albuminoid or Angloid Renal Degeneration, Parenchymatous Renal Degeneration). Diabetes Mellitus and Glycosuria. Diabetes Insipidus and Hydruria. Urinary Calculi.

General methods for the examination of the urine, and the chemical reagents and manipulations required in its analysis, are to be found in so many text-books and treatises that we may omit them here, and confine ourselves to the differential symptoms of some of the most prominent and frequent renal diseases.

THE EARLY SIGNS OF BRIGHT'S DISEASE.

The early progress of Bright's disease is often remarkably insidious, and readily escapes recognition. Nor is it to be detected by the familiar and easy plan of testing for albumen. This substance is by no means invariably present in the urine, even in advanced and well-marked cases. FOTHERGILL justly observes that the progress of interstitial nephritis is often without the albuminous secretion for long periods.

On the other hand, it has been abundantly shown that albumen is occasionally and transiently present in the urine of persons who present no traces of nephritis; who, in fact, may be in excellent health.

Hence the value of other means of determining the existence of

these forms of renal disease becomes manifest. Of these the presence of *hyaline casts* has recently been urged as pathognomonic of renal hyperæmia and inflammation, and invariably present.* These must be sought for with considerable care, as from their transparent character, and the fact that they do not form a sediment, they are readily overlooked. The directions given for their search are that the urine to be examined is placed in a tall conical glass; after three to six hours it is inspected; from the visible deposits, whether floating or sedimentary, with the pipette a quantity is taken sufficient to fill a concave slide or a shallow cell.

This little pool is first searched with a four-tenths objective, and in a little time any cast or other microscopic object it contains is found. A more careful observation is made of the object thus found with the one-fifth. When the examination of deposits has been made in this way, the conical glass of urine should be set aside (a little chloral may be added to prevent decomposition), and after twelve hours more the examination should be repeated. Of course it will be remembered that the hyaline cast may be found when the condition of the kidney is only one of transient hyperæmia.

The effort has also been made to call in the aid of the ophthalmoscope. The presence of minute white exudations in the retina, principally around the maculæ luteæ, are believed to point to the presence of Bright's disease, and to be found in its early stages. The appearance of the retina in these cases is characteristic. It consists in the grouping of small white spots, the outline of each being clearly defined; they are invariably circular, of extremely small dimensions, and present the appearances of a pearl of an intensely bright color, and stand out from the retina in a marked manner. The grouping of the spots is symmetrical in each eye, and is generally in the form of a crescent. Often the urine will only yield signs of the minutest quantities of albumen—sometimes none at all; but hyaline casts and these white spots may be detected by the processes here described.

In the form of *amyloid degeneration* the difficulties of diagnosis are yet increased, as not only has it been generally recognized that albu-

* Dr. B. A. SEGUR, *Proceedings of the Medical Society of Kings Co.*, 1878, p. 241.

men may be absent for considerable periods while the disease is steadily advancing, but it has been abundantly shown that it may never appear at all in fatal cases.*

It seems, therefore, certain that we possess at present no sure diagnostic of amyloid degeneration of the renal vessels; that on the one hand, it is likely to be confounded with, or mistaken for, chronic parenchymatous nephritis arising under identical etiological conditions; on the other, it runs a great risk of being altogether overlooked. But both of these evils may be avoided with a little care. BARTELS points out that the differential diagnosis between amyloid disease and chronic parenchymatous nephritis depends upon the distinguishing characters of the urine, which, in the former, is clear with little sediment and few casts, mostly hyaline, and scarcely ever blood-corpuscles; in the latter it is always more or less turbid, with considerable sediment, is dirty colored, contains many casts of every variety, and not uncommonly blood-corpuscles. In those cases in which no albumen was present, there have been signs of amyloid disease in other organs; and, in order to escape error, it will be enough to know that the absence of albumen from the urine does not exclude a slight degree of amyloid disease of the kidneys.

We shall now proceed to classify the diagnostic points in the differentiation of the seven forms into which the varieties of Bright's disease are now divided.

*Lecorché, *Maladies des Reins*, Paris, 1875; Litten, *Berliner Klinische Wochenschrift*, June, 1878.

COMPARISON OF THE DIFFERENT

	<i>Acute Parenchymatous Nephritis.</i>	<i>Chronic Tubal Nephritis.</i>	<i>Yellow Fatty Kidney.</i>
History.	Sudden onset after scarlet fever or exposure to wet and cold. Oedema of the face the sign first noticed; headache, feverishness, pain in the loins, gastric disturbance.	Symptoms of more than six weeks' duration. Often history of acute nephritis. Uræmic symptoms; abnormally low temperature. Serous inflammations. Cardiac hypertrophy.	Often follows alcoholism.
Appearance.	Dropsical, swollen about the face; skin generally dry.	More or less oedema, and general anasarca. A pale, almost characteristic, waxy look.	Dropsy considerable and persistent; renal cachexia often marked.
Urine.	Scanty, smoke-colored, dark when acid, red if alkalized. Highly albuminous. Specific gravity high, 1025-1030. Reddish brown sediment of epithelial, blood and hyaline casts.	Generally scanty, though variable. Pale, albumen about one-fourth, specific gravity low, 1005-1015; white sediment of hyaline and epithelial casts. No blood casts.	Scanty, pale, low specific gravity, with abundant sediment of oil casts and cells filled with oil. Albumen abundant.
Prognosis.	Recovery frequent. May lead to chronic tubal nephritis.	Recovery not likely.	Almost certainly fatal.
Pathology.	Kidneys enlarged, congested, vascular; cortical substance increased. Tubules dark and dense.	Kidneys enlarged, cortical substance increased, capsules easily separated.	Kidneys enlarged, fatty, mottled, the tubes full of fat and oil cells.

FORMS OF BRIGHT'S DISEASE.

<i>Secondary Contraction of Kidney.</i>	<i>Interstitial Nephritis. Renal Cirrhosis.</i>	<i>Albuminoid or Amyloid Renal Degeneration.</i>	<i>Parenchymatous Renal Degeneration.</i>
Symptoms of more than a year's duration. Headache. Coma or convulsions. Cardiac hypertrophy. Epistaxis.	Symptoms few and faint. Often the arthritic diathesis. Exposure to cold and fatigue. Sense of weariness. Frequent headaches. Amaurosis. Cardiac hypertrophy.	Antecedent syphilis, phthisis or osseous disease. Enlarged liver or spleen. Chronic diarrhoea.	Pregnancy, diphtheria, or acute fever.
Generally some dropsy, but not very extensive. Face sallow.	Little or no dropsy. Nerve implications, as paralysis, loss of sight or hearing, etc.	Dropsy, generally amenable to treatment. Emaciation. Face sallow or pallid. Dyspnoea.	Generally no dropsy.
Scanty, pale, specific gravity about 1015. Albumen moderate. Sediment of pale casts, dark granules, fatty cells and waxy products.	Largely increased, pale; albumen trifling; sediment little, of finely granular casts, or minute oil drops. Specific gravity low.	Largely increased, (50-60 oz.) pale or golden; albumen considerable, perhaps one-half. Specific gravity 1007-1015; little or no sediment; casts hyaline and waxy.	Normal in amount. Albumen $\frac{1}{10}$ to $\frac{1}{4}$ bulk.
Generally fatal, but of slow progress.	With care, not immediately dangerous, but predisposes to uræmic attacks from exposure.	Incurable, though the patient may live for years.	Recovery frequent.
Kidneys contracted, dense, capsule adherent; atrophy of the tubules.	Kidneys at first enlarged, later contracted; connective tissue increased; capsule adherent, diminished and corrugated. "Chronically contracted" kidney.	Kidneys enlarged, smooth, waxy looking.	Kidney enlarged, the parenchyma more or less hypertrophied.

DIABETES MELLITUS AND GLYCOSURIA.

The presence of *sugar in the urine* is characteristic of both these conditions. The most convenient, simple test is caustic potash, either in solution or small fragments. Heated with urine containing sugar, this substance immediately produces a more or less yellow or brown color, the intensity of which is in proportion to the quantity of sugar present.

Apart from this test, the presence of sugar in the urine is revealed by many indications. We may often recognize it by grayish patches on the clothing or linen, which are reduced to powder when scratched with the nail. In women the chemise, from prolonged contact with the urine, may become spotted and stiffened as if by drops of syrup. Another circumstance indicating the sugary savor of the urine, especially in the country, is the great number of flies or ants that will be attracted around the vessel containing it.

The presence of sugar once determined, it remains to decide whether it arises from simple glycosuria, which is a comparatively common and not dangerous condition, or from saccharine diabetes, which is much more rare and a very perilous affection. This distinction has lately been insisted upon by M. GÉRIN ROZES. The contrasting features of the two disorders may be presented as follows :

DIABETES MELLITUS.

Onset gradual ; occurs at all ages, and without reference to known predisposing causes.

The amount of sugar varies very little.

The absence of saccharine food makes little or no change in the urine.

SIMPLE GLYCOSURIA.

Onset sudden ; more common in the aged ; in persons consuming saccharine food ; in the insane ; in those taking chloral ; in the paroxysms of ague ; after sudden excitement ; blows on the head ; cerebral affections.

The amount of sugar varies greatly from day to day (pathognomonic, ROZES).

The withdrawal of saccharine food diminishes the sugar.

DIA BETES MELLITUS.

Volumetric analysis by Fehling's method is easy.

Polyuria, polyphagia, polydipsia, and impotence common and well marked.

Nervous complications frequent.

Treatment of little avail; result usually fatal

SIMPLE GLYCOSURIA.

Such analysis is obscure, owing to the quantity of creatinine substances present.

All these may be, and generally are, absent, or slightly marked.

Rare.

Treatment efficient; result usually favorable.

With the knowledge of the very fatal character of diabetes mellitus, a recognition of its earliest symptoms becomes of immense importance for treatment. Its invasion is seldom sudden, and at the very outset it is curable, which it rarely or ever is, when once developed.

Various nervous symptoms are among the earliest noted, and it is a wise rule in all nervous disorders of a doubtful character to examine the urine for sugar. Changes in the character of an individual, an abnormal irritability of temper, insomnia, and extreme feeling of fatigue, disorders of vision, itching of the skin, pruritus of the genital organs, especially the vulva, and more or less protracted headache, are often premonitory symptoms. Intense and obstinate neuralgic pains, without obvious cause, especially in the foot and leg, should lead to the suspicion of diabetes. Recurrent boils and carbuncles are well known to accompany the diabetic condition.

Genital impotence is one of the first signs of approaching diabetes; and whenever individuals are met with who, previously virile, become weak and impotent without coinciding disease, especially of the spinal marrow, diabetes will usually be found to be the cause. Valuable information is derivable from the mouth; for besides the insatiable thirst and dry mouth, some patients complain of a disagreeable taste, which is sometimes acrid, and at others faint or bitter or sugary; and it is this perverted taste which contributes to maintain the thirst.

The mouth frequently exhibits an aphthous condition, while the

edges and tip, and even the whole surface of the tongue, may present a red aspect, as if the aphthæ had been removed. The gums also are often softened, fungous or bleeding; while in some the teeth become loose or fall out without being decayed, and in others become carious. The breath is frequently of a bad, acid smell, and the saliva on examination is acid instead of neutral. Another fact which has sometimes led to the diagnosis, is the existence of intertrigo at the commissure of the lips. This intertrigo labialis is not exclusively connected with diabetes, but when met with should always lead to an examination of the urine.

With regard to the digestive organs, bulimia on the one hand, and a complete repugnance for food on the other, with dyspepsia, should lead us to suspect diabetes. The unusual thirst of diabetics prompts them to drink at night, and such a habit should suggest strict inquiry for other symptoms. As a general rule it may be said that whenever there is muscular debility, emaciation and anæmia without discoverable local cause, the urine should be examined, and will almost always be found to contain either sugar or albumen.

DIABETES INSIPIDUS AND HYDRURIA.

The habitual discharge of an excessive amount of urine of low specific gravity, and containing neither albumen nor sugar, if accompanied with progressive emaciation, excessive thirst, and loss of vital power, constitutes *diabetes insipidus*; but under various conditions excessive diuresis may be temporarily present, as in hysteria and other cerebro-spinal and nervous affections, without serious general symptoms, and constitute the condition of *hydruria*. The distinction between the two can be made by noting the coincident disease in the latter form, the slight direct impairment of the general health, the varying amount of urine voided, and by the fact that the quantity, although large, never attains those extraordinary measures—thirty to fifty pints daily—which marked cases of diabetes insipidus present. A large amount of urine is discharged by patients with amyloid degeneration of the kidney.

URINARY CALCULI.

There are but three forms of calculi which are of at all common occurrence, and which are, therefore, likely to demand analysis. These are *uric acid and compounds*, *oxalate of lime*, and the *mixed phosphates*. Calculi of *xanthine* and *cystine* are found, though very rarely.

1. *Uric acid calculi* are the most common. They are either red or some shade of red, and usually smooth, but may be tuberculated. They leave a mere trace of residue after ignition.

2. *Oxalate of lime calculi* are frequently met with. They are generally of a dark-brown or dark-gray color, and from their frequently tuberculated surface have been called mulberry calculi. They may, however, also be smooth. Considerable residue remains after ignition. The calculus is soluble in mineral acids without effervescence.

3. *Calculi of the mixed phosphates or fusible calculi* are composed of the phosphate of lime and of the triple phosphate of ammonia and magnesia. They form the external layer of many calculi of different composition, and may form entire calculi, but very seldom form the nuclei of other calculi. They are white, exceedingly brittle, fuse in the blowpipe flame, and are soluble in acids, but insoluble in alkalis.

Few calculi of large size are of the same composition throughout. Oxalate of lime is the most frequent nucleus; uric acid may also serve as a nucleus, but phosphates, as stated, almost never. Small collections of organic matter, as blood-clots, frequently form nuclei, and may often be recognized by the odor of ammonia on ignition. It is not uncommon to find calculi made up of concentric layers of different composition.

TO DETERMINE THE COMPOSITION OF CALCULI*.

Heat a portion of the *powdered* calculus to redness upon platinum foil. Note whether there is a residue.

* The processes here given are taken, with slight alterations, from Thudichum's work on the *Pathology of the Urine*.

A. *There is a fixed residue.* To a portion of the original powder apply the murexid test. This is as follows: Dissolve a small portion of the powder in a drop or two of nitric acid on a porcelain plate, then carefully evaporate over a spirit lamp. When dry add a drop or two of liquor ammoniæ, when if uric acid is present, a beautiful purple color will appear where the ammonia spreads.

I. A purple color results; *uric acid* is present. Observe whether a portion of the calculus melts on being heated.

a. It melts and communicates—

1. A strong yellow color to the flame of a spirit lamp; *sodium urate*.

2. A violet color to the flame; *potassium urate*.

b. It does not melt. Dissolve the residue after ignition in a little dilute HCl, add ammonia until alkaline, and then ammonium carbonate solution.

1. A white precipitate falls; *calcium urate*.

2. No precipitate. Add some hydric sodic phosphate solution; a white crystalline precipitate falls; *magnesium urate*.

II. No purple color results. Observe whether a portion of the calculus melts on being heated strongly.

a. It melts (fusible calculus). Treat the residue with acetic acid; it dissolves. Add to the solution ammonia in excess; a white crystalline precipitate falls; *ammonio-magnesium phosphate*. In case the melted residue is insoluble in acetic acid, treat with HCl; it dissolves. Add to the solution ammonia; a white precipitate indicates *calcium phosphate*.

b. It does not melt. Moisten the residue with water, and test its reaction with litmus paper; it is not alkaline. Treat with HCl; it dissolves without effervescence. Add to the solution ammonia in excess; white precipitate; *calcium phosphate*. Treat the calculus with acetic acid; it does not dissolve. Treat the residue after heating with acetic acid; it dissolves with effervescence; *calcium oxa-*

late. Treat the original calculus with acetic acid; it dissolves with effervescence; *calcium carbonate*.

B. There is no fixed residue. Apply the murexid test (p. 200).

I. A purple color is developed.

a. Mix a portion of the powdered calculus with a little lime, and moisten with a little water; ammonia is evolved, and a red litmus paper suspended over the mass is turned blue; *ammonium urate*.

b. No ammonia; *uric acid*.

II. No purple color.

a. But the nitric acid solution turns yellow as it is evaporated, and leaves a residue insoluble in potassium carbonate; *xanthine*.

b. The nitric acid solution turns dark brown, and leaves a residue soluble in ammonia; *cystine*.

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